Vol. 1024 Number 2

OFFICIAL GAZETTE

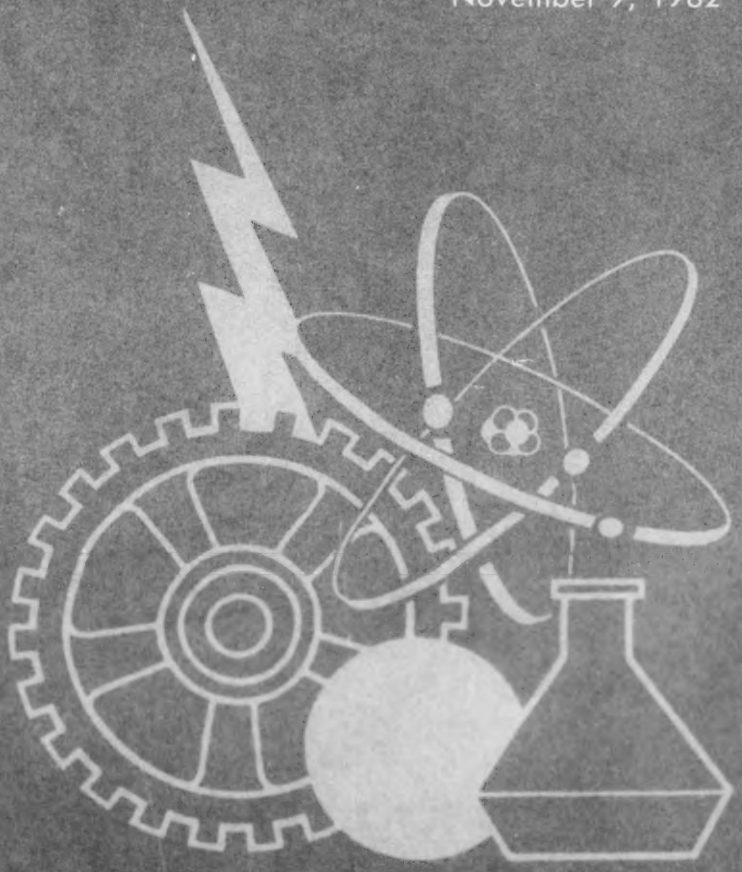
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

November 9, 1982



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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 9, 1982 Volume 1024 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

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GENERAL INFORMATION concerning TRADEMARKS.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,984,849, Re. S.N. 201,183, Filed Oct. 27, 1980, Cl. 354/100, PHOTOGRAPHIC COLOR SEPARATION EQUIPMENT, Emile Armand Henri Guillaume, Owner of Record: *Zelacolor Systems Establishment, Vaduz, Liechtenstein,* Attorney or Agent: Sidney G. Faber, et al., Ex. Gp.: 211

4,043,318, Re. S.N. 396,573, Filed July 9, 1982, Cl. 126/442, SOLAR ENERGY COLLECTOR, Yu K. Pei, Owner of Record: *Owens-Illinois, Inc., Toledo, Ohio,* Attorney or Agent: John R. Nelson, Ex. Gp.: 345

4,212,481, Re. S.N. 398,143, Filed July 14, 1982, Cl. 280/276, SUSPENSION SYSTEM FOR VEHICLE WHEELS, Valentino Ribi, Owner of Record: *Honda Giken Kogyo Habushiki Kaisha, Saitama, Japan,* Attorney or Agent: Richard Wiener, Ex. Gp.: 316

4,220,687, Re. S.N. 410,748, Filed Aug. 23, 1982, Cl. 428/546, POWDERED METAL CASING FOR PERFORATING CHARGE AND ITS METHOD OF MANUFACTURE, Glenn B. Christopher, Owner of Record: *Jet Research Center, Inc., Arlington, Tex.,* Attorney or Agent: James R. Duzan, et al., Ex. Gp.: 223

4,227,730, Re. S.N. 410,749, Filed Aug. 23, 1982, Cl. 294/16, GRIPPER MEMBER FOR RETENTION OF A PLASTIC TUBE, John B. Alexander, et al., Owner of Record: *Baxter Travenol Laboratories, Inc., Deerfield, Ill.,* Attorney or Agent: Paul C. Flattery, et al., Ex. Gp.: 313

4,256,166, Re. S.N. 412,791, Filed Aug. 3, 1982, Cl. 164/154, TIE BAR ADJUSTMENT SYSTEM, Edgar D. Prince, Owner of Record: *Prince Corp., Holland, Mich.,* Attorney or Agent: Peter P. Price, et al., Ex. Gp.: 324

4,290,440, Re. S.N. 412,191, Filed Aug. 27, 1982, Cl. 137/75, VALVING (QUICK DISCONNECT COUPLING) WITH A HEAT-SENSITIVE CUTOFF FEATURE, Malcolm B. Sturgis, Owner of Record: *M. B. Sturgis, Inc., St. Louis, Mo.,* Attorney or Agent: Senniger, Powers, Leavitt & Roedel Ex. Gp.: 341

4,305,923, Re. S.N. 408,497, Filed Aug. 16, 1982, Cl. 424/1, METHOD FOR QUANTITATIVE ANALYSIS FOR LIMONIN, Elmar W. Weiler, et al., Owner of Record: *Inventor,* Attorney or Agent: William D. Stokes, Ex. Gp.: 223

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,902,606, Reexam. No. 90/000,262, Requested: Sept. 28, 1982, Cl. 414/733, HANDLING APPARATUS, Arne Ingbert Ronbeck, Owner of Record: *A. B. Volvo, Goteborg, Sweden,* Attorney or Agent: Robert J. Patch, Ex. Gp.: 310, Requester: Owner

4,034,210, Reexam. No. 90/000,269, Requested: Oct. 13, 1982, Cl. 235/487, CREDIT CARD CARRIERS AND METHODS OF MANUFACTURE, James E. Hill, et al., Owner of Record: *Dynetics Engineering Corp., Wheeling, Ill.,* Attorney or Agent: Dulin, Thienpont & Pollhast, Ex. Gp.: 214, Requester: Data Card Corp., Minneapolis, Minn.

4,174,332, Reexam. No. 90/000,260, Requested: Sept. 29, 1982, Cl. 523/404, SELF-CROSSLING RESIN EMULSIONS FOR CATHODICALLY DEPOSITABLE COATING COMPOSITIONS, Helmut Honig, et al., Owner of Record: *Vianova Kunstharz AG, Wien, Austria,* Attorney or Agent: Alfred W. Breiner, Ex. Gp.: 140, Requester: John T. Fedigan, Washington, D.C.

4,194,685, Reexam. No. 90/000,268, Requested: Oct. 13, 1982, Requester: 235/375, VERIFYING INSERTION SYSTEM APPARATUS AND METHOD OF OPERATION, James E. Hill, et al., Owner of Record: *Dynetics Engineering Corp., Wheeling, Ill.,* Attorney or Agent: Jacques M. Dulin, Ex. Gp.: 230, Requester: Data Card Corp., Minneapolis, Minn.

4,208,747, Reexam. No. 90/000,266, Requested: Oct. 12, 1982, Cl. 4/228, PASSIVE DOSING DISPENSER EMPLOYING TRAPPED AIR BUBBLE TO PROVIDE AIR-LOCK, Robert S. Dirksing, Owner of Record: *Requester,* Attorney or Agent: Milton B. Graff, Ex. Gp.: 240, Requester: Proctor & Gamble Co., Cincinnati, Ohio

4,274,686, Reexam. No. 90/000,267, Requested: Oct. 5, 1982, Cl. 312/27, FREE ARM SEWING MACHINE CABINET MOUNTING MECHANISM, Ralph B. White, Owner of Record: *Inventor,* Attorney or Agent: Gust, Irish, Jeffers & Hoffman, Ex. Gp.: 355, Requester: Martin E. Goldstein, c/o McAulay, Fields, Fisher, Goldstein & Nissen, New York, N.Y.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,955,576, Robert D. Safford, TAPE FASTENER SYSTEM FOR DISPOSABLE DIAPERS, Interference No. 100,041, decided June 18, 1982, claims 1–5.

Patent No. 4,008,109, Gerard Norton, SHAPED HEAT INSULATING ARTICLES, Interference No. 100,366, decided June 3, 1982, claim 1.

Patent No. 4,028,647, Henry Kai-Hen Yee, MONOLITHIC CRYSTAL FILTERS, Interference No. 100,050, decided June 18, 1982, claims 1, 2, 4, 5, 7 & 8.

Patent No. 4,053,591, Peter J. L. Daniels and Stuart W. McCombie, 5-DEOXY-4,6-DI-0-(AMINOGLYCOSYL)-1,3-DIAMINOCYCLITOLS, METHODS FOR THEIR MANUFACTURE, METHOD FOR THEIR USE AS ANTIBACTERIAL AGENTS AND COMPOSITIONS USEFUL THEREFOR, Interference No. 100,087, decided May 24, 1982, claims 1, 2, 4, 5, 14 & 15.

Patent No. 4,087,170, Eiji Sawaoka and Shinichi Hashimoto, ELECTROSTATIC COPYING APPARATUS WITH COMBINED CHARGING TRANSFER UNIT, Interference No. 100,681, decided July 9, 1982, claims 1, 3, 4, 6, 7, 11 & 12.

Patent No. 4,180,664, Pierre Perrin, Gert Hegar, Gerald Siegrist, Herbert Seiler and Ulrich Horn, PROCESS FOR IMPROVING THE COLOUR YIELD AND FASTNESS PROPERTIES OF DYEINGS PRODUCED WITH ANIONIC DYES ON CELLULOSE FIBRE MATERIAL AND CATIONIC FIBRE-REACTIVE COMPOUNDS, Interference No. 100,761, decided July 22, 1982, claims 1–3 & 5–15.

Patent No. 4,218,881, Robert P. Huffman and Jesse Thomas, BELT CONVEYOR DRIVE SYSTEM, Interference No. 100,827, decided July 2, 1982, claim 1.

Patent No. 4,237,538, Guy LeDall, ELECTRONIC MEANS FOR CONTROLLING THE REGENERATION OF RESINS IN A RESIN TYPE ION EXCHANGE DEVICE, Interference No. 100,742, decided July 30, 1982, claims 10–12 & 14–20.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

PATENT NOTICES

Certificates of Correction for the Week of Nov. 9, 1982,

4,091,833	4,286,744	4,321,772	4,339,155
4,132,181	4,288,299	4,322,904	4,339,335
4,143,070	4,289,578	4,325,735	4,340,204
4,181,798	4,289,696	4,326,617	4,340,549
4,214,085	4,289,995	4,327,318	4,341,000
4,216,326	4,292,781	4,328,540	4,341,205
4,222,117	4,296,567	4,328,753	4,341,606
4,222,156	4,297,105	4,329,195	4,342,264
4,224,317	4,297,375	4,329,449	4,342,710
4,228,629	4,297,782	4,330,435	4,343,326
4,230,540	4,298,400	4,331,138	4,343,372
4,230,596	4,299,113	4,331,467	4,343,464
4,234,689	4,300,805	4,331,598	4,344,404
4,237,218	4,303,978	4,331,791	4,344,440
4,238,616	4,304,777	4,331,910	4,344,596
4,243,611	4,304,806	4,332,085	4,345,604
4,246,033	4,306,100	4,333,080	4,345,840
4,249,931	4,307,012	4,333,981	4,345,880
4,253,431	4,307,988	4,335,449	4,345,919
4,263,634	4,310,586	4,336,089	4,346,413
4,265,373	4,311,290	4,336,171	4,346,644
4,267,117	4,313,177	4,336,641	4,347,716
4,269,963	4,313,625	4,336,658	4,348,259
4,272,623	4,319,194	4,338,098	
4,282,156	4,320,315	4,338,233	
4,283,837	4,320,411	4,338,620	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4559
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Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 30, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-20-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	2-27-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-07-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-19-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-02-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-22-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	10-20-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-24-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	8-22-80

Expiration of patents: The patents within the range of numbers indicated below expire during September 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,204,251 to 3,209,368, inclusive

Plant Patents ..... Numbers 2,552 to 2,557 inclusive

REISSUES

NOVEMBER 9, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,074

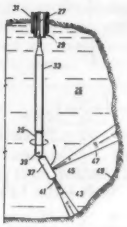
WELL SURVEYING INSTRUMENT AND METHOD

Ernst P. Nolte, Hildesheim, Fed. Rep. of Germany, assignor to Prakla-Seismos G.m.b.H, Hanover, Fed. Rep. of Germany

Original No. 3,614,891, dated Oct. 26, 1971, Ser. No. 807,883, Mar. 17, 1969. Application for reissue Apr. 4, 1980, Ser. No. 137,526

Int. Cl.[3] **E21B** *47/00*

U.S. Cl. 73—151 **15 Claims**



6. Method [according to claim **5**, including] *of investigating the size and shape characteristics of a subsurface earth cavity, or the like, penetrated by a borehole, comprising the steps of*

establishing a radiant acoustic energy source in said cavity at a selected location on the vertical axis of said borehole,

projecting radiant acoustic energy during a substantially continuous scan from said source into said cavity at a plurality of selected angles between about 0° and about 180° from said vertical axis, such that the acoustic energy is directed at selected portions of the walls and roof of the cavity including those portions adjacent the borehole;

rotating said source about said vertical axis of said borehole, and

receiving reflected acoustic energy.

Re. 31,075

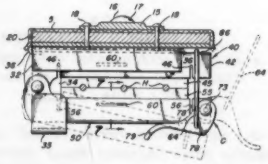
GARMENT BAG ASSEMBLY

Wallace London, 641 S. Monroe St., Baltimore, Md. 21223, and Kurt L. Meyer, Ellicot City, Md., assignors to Wallace London, Baltimore, Md.

Original No. 4,252,220, dated Feb. 24, 1981, Ser. No. 98,869, Nov. 30, 1979. Application for reissue Apr. 13, 1981, Ser. No. 253,385

Int. Cl.[3] **A45C** *3/00*

U.S. Cl. 190—41 B **17 Claims**



9. In a frame type garment bag assembly having means on the outside of the top thereof for suspending the bag while loading therein or unloading therefrom a plurality of garments on supports therefor, each comprising a vertical wire shank extending upwardly from the center of the support and terminating in a downwardly extending curved hook portion, and means for securely locking a plurality of the garment supports entirely within the bag, the improvement comprising

(a) a jointed clamp disposed in a generally vertical plane and having an upper channel fixed to the top of the garment bag and a lower channel pivotally mounted to said upper channel at one end thereof, with the open edge of each channel facing the other,

(b) a horizontally disposed hinge pin at said end extending beyond the external surfaces of said channels,

(c) a reenforcing sleeve surrounding said hinge pin between the internal surfaces of said channels,

(d) a strip of resilient material seated within each channel and protruding beyond the open edge thereof,

(e) a latching device of high mechanical efficiency at the opposite end of said jointed clamp for alternately permitting the spreading of said channels or the clamping thereof together, for embracing the hook portions of the garment supports to maintain them in fixed position, and

(f) means extending between said last-mentioned upper channel and said lower channel for limiting the pivotal movement of the latter in the open position of said jointed clamp, to provide an inclined support for the hook portions of the garment supports in the course of loading and unloading the latter into and from the garment bag.

Re. 31,076

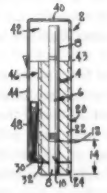
CIGARETTE PACKAGE

Rodney W. Herman, 1002 Glenhill Rd., St. Paul, Minn. 55112

Original No. 4,207,976, dated Jun. 17, 1980, Ser. No. 28,562, Apr. 9, 1979. Application for reissue Jun. 1, 1981, Ser. No. 268,745

Int. Cl.[3] **B65D** *25/10*

U.S. Cl. 206—246 **15 Claims**



15. An improved cigarette package for containing a plurality of elongated cigarettes, which comprises:

(a) a body;

(b) means contained in the body for holding the cigarettes in a generally upright position in which the holding means includes a plurality of passageways for respectively encircling at least a portion of each cigarette for supporting that cigarette in a generally upright position;

(c) means located in each passageway for retaining the cigarette therein until it is removed from the package for smoking, said retaining means including a burnable membrane extending across each passageway and a wad of non-flammable material in each passageway intermediate said membrane and the cigarette retained in the passageway;

(d) wherein each passageway has an open end located on an exterior side of the package such that one cigarette butt may be inserted into a passageway through the open end thereof for retaining a number of cigarette butts in the package corresponding to the number of passageways; and

(e) wherein each of said membranes is spaced proximate one of said open ends of said passageways so that cigarette butts

inserted through said open ends can burn through said membranes and be extinguished by said wads.

Re. 31,077

POWDER PAINT WITH EPOXY AND HYDROXY COPOLYMER AND MIXTURE OF DICARBOXYLIC ACIDS AND POLYANHYDRIDES

Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Original No. 3,932,367, dated Jan. 13, 1976, Ser. No. 552,457, Feb. 24, 1975. Continuation-in-part of Ser. No. 394,881, Sep. 6, 1973, abandoned. Application for reissue Apr. 7, 1976, Ser. No. 674,463

Int. Cl.³ C08F *8/46*

U.S. Cl. 525—327.3 **17 Claims**

1. In a thermosettable powder paint which exclusive of pigments, catalysts, antistatic agents, plasticizers and flow control agents, the same being conventional nonreactive additives to a thermosettable powder paint, consists essentially of a coreactive particulate mixture of

1. a [qualitatively difunctional] copolymer of about 5 to about 20 weight percent of a glycidyl ester of a monoethylenically unsaturated acid ard about 95 to about 80 weight percent of monoethylenically unsaturated monomers and having a glass transition temperature in the range of about 40° C. to about 90° C. and a molecular weight (M_n) in the range of about 1500 to about 15,000, and
2. a C_4–C_{20} saturated, straight chain, aliphatic dicarboxylic acid,

the improvement wherein

A. said copolymer is qualitatively difunctional and said other monoethylenically unsaturated monomers consist essentially of difunctional monomers selected from the group consisting of C_5–C_7 hydroxyalkyl acrylates and C_5–C_7 hydroxyalkyl methacrylates in an amount comprising about 2 to about 10 weight percent of said copolymer and monofunctional monomers selected from the group consisting of esters of a C_1–C_8 monohydric alcohol and acrylic acid, esters of a C_1–C_8 monohydric alcohol and methacrylic acid and C_8–C_{12} monovinyl hydrocarbons, and

B. there is substituted for a portion of said dicarboxylic acid a polyanhydride having molecular weight in the range of about 1000 to about 5000 and the resultant mixture of said dicarboxylic acid and said polyanhydride is [porportional] *proportional* and quantified such that said dicarboxylic acid is present in an amount that provides about 0.1 to about 0.6 carboxyl groups per [epoxy] *functional* group on said copolymer and said polyanhydride is present in an amount that provides about 0.2 to about 1.1 anhydride pgroups per [epoxy] *functional* group on said polymer.

Re. 31,078

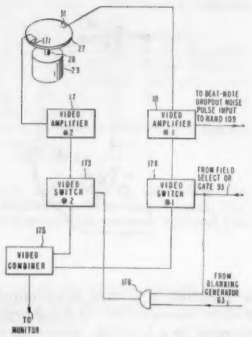
VIDEO TAPE RECORDER SYSTEM HAVING MEANS FOR SUPPRESSING VIDEO TRACK CROSSOVER NOISE DURING SLOW AND FAST MOTION OPERATION

Richard J. Segerstrom, Portola Valley, Calif., assignor to Video Logic Corporation, Sunnyvale, Calif.

Original No. 3,662,101, dated May 9, 1972, Ser. No. 882,971, Dec. 8, 1969. Application for reissue Apr. 13, 1979, Ser. No. 29,688

Int. Cl.³ H04N *5/78, 7/12*

U.S. Cl. 360—10.3 **28 Claims**



1. The method of recording video signals on a magnetic tape of a video tape recorder at a normal longitudinal tape speed and reproducing said video signals from said magnetic tape at normal longitudinal tape speeds and at speeds different from normal longitudinal tape speeds comprisng the steps of

recording a plurality of separate non-redundant video fields in series in each one of a sequence of video tracks recording along the tape,

scanning the video tracks with a magnetic reproduce head to reproduce [the recorded fields in order] *at least one recorded field per track* for display on a video display means,

said reproduce head crossing over the space on the magnetic tape between adjacent video tracks and producing a noise on the video signal when the longitudinal tape speed is changed from the normal speed, and *detecting the occurrence of said noise and* blanking out that particular *noisy* field in each track at which the head crossover between adjacent tracks occurs, *whereby at least one noise-free field in each track is reproduced for display.*

PLANT PATENTS

GRANTED NOVEMBER 9, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,922
MINIATURE ROSE PLANT

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Dec. 5, 1980, Ser. No. 213,739
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a carmine color, and further characterized by a plant of vigorous and upright growth habit, easy to propagate from cuttings or by budding, with an abundance of small to medium glossy foliage and an abundance of flowers borne singularly on upright sturdy stems.

4,923
ROSE PLANT

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed Apr. 30, 1981, Ser. No. 258,951
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by well shaped buds and flowers, the petals being near white overlaid or flecked with rose pink on upper ⅓ (more or less) of the buds and flowers, resembling Over the Rainbow (miniature — U.S. Plant Pat. No. 3,472) in size and shape; and further characterized by a plant which is vigorous and compact, easy to propagate from cuttings, with an abundance of small matte foliage and an abundance of flowers borne singly or several to the stem.

4,924
ROSE PLANT

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 1, 1981, Ser. No. 259,894
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are medium to light pink in color (being a blend of soft pink and yellow), the buds and flowers resembling Peaches 'N Cream (miniature — U.S. Plant Pat. No. 4,278), in color, size and shape; and further characterized by a plant which is vigorous and compact, easy to propagate from cuttings or by budding; with an abundance of small semi-glossy to matte foliage and an abundance of flowers borne singly (sometimes several) on sturdy slender stems.

4,925
MINIATURE ROSE PLANT

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 4, 1981, Ser. No. 260,327
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are medium to light rose pink in color, the buds and flowers resembling Peaches 'N Cream (miniature — U.S. Plant Pat. No. 4,278) in size and shape, but more double; and further characterized by a plant which is vigorous and compact, easy to propagate from cuttings or by budding, with an abundance of disease resistant small glossy foliage and an abundance of flowers borne singly or several to the stem in loose clusters.

4,926
APPLE TREE

Stephen M. Coke, and Leon I. Smith, both of Yakima, Wash., assignors to McCormick's Fruit Tree Co. Inc., Yakima, Wash. and Bountiful Ridge Nurseries, Inc., Princess Anne, Md., a part interest

Filed Feb. 9, 1981, Ser. No. 232,507
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a dwarf resemblance to "Starking" (unpatented) Delicious, the fruit being similarly dwarf on the order of a crab apple, though having coloring resembling "Starking", the wide angle branching habit the first year as opposed to the usual mostly leafy growth of most apple varieties, late blooming, as much as sixteen days later than Rose Red, Jonathan and other similar varieties, and the very suitable use as a clonal rootstock for other apple varieties and also many pear varieties which when grown on usual pear rootstock are susceptible to pear decline and other pear disorders, to which the apple rootstock of this variety is not susceptible.

4,927
NECTARINE TREE (83-50)

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Jun. 8, 1981, Ser. No. 271,529
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized by freestone fruit in harvest about three weeks earlier than the fruit of the Summer Grand and about with the fruit of the Early Sun Grand.

4,928
GRAPEVINE

Elmer Swenson, Rte. 2, Box 118, Osceola, Wis. 54020

Filed Feb. 11, 1981, Ser. No. 233,685
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—47 **1 Claim**

1. A new and distinct variety of grapevine, substantially as shown and described herein, characterized particularly as to novelty by the unique combination of winter hardiness down to −39° F. in northern Wisconsin, with grapes of very low acidity, high sugar content, no labrusca flavor or aroma, and producing a good wine similar to a light to medium burgundy.

4,929
AZALEA PLANT NAMED SOUTHERN BELLE

Luther L. Mitchell, P.O. Box 3366, Oxford, Ala. 36203

Filed Dec. 15, 1980, Ser. No. 216,313
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—56 **1 Claim**

1. A new and distinct cultivar of the Rutherford azalea, with features herein shown and described, characterized by the distinct narrow, yellow-white margins.

4,930

ALSTROEMERIA NAMED STABLACO

Jacob van Andel, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij and M. C. van Staaveren, both of Aalsmeer, Netherlands

Filed Jan. 21, 1981, Ser. No. 226,812
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinct variety of alstroemeria plant, substantially as herein shown and described, characterized by the distinctive off-white principal coloring of the flowers, and the rows of dark brown pencil stripe spots appearing on a yellow background and extending from the flower throat.

4,931

EUPHORBIA HYBRID "SULEIKA"

Alfred Stirnadel, Schwarzwaldstr. 80, 6660 Zweibrucken 15, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 245,909
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new stable and distinct Euphorbia hybrid resulting from selective inbreeding pollination ex "Gabriela" substantially as herein shown and described, and characterized in that blossom clusters develop only at the germinating tip and upper leaf axes thereby limiting vertical growth to a height of about 10–12 cm.

4,932

LILY PLANT: LILIUM 'VENTURE'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Sandy, Oreg.

Filed Apr. 29, 1981, Ser. No. 258,741
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its vigorous growth, its rapid natural propagation under field conditions, its healthy growth when forced under glass throughout the entire year, its favorable bulb growth response after prolonged storage even when the bulbs are frozen, its tall stems, its high bud count, and the deep, blood red color of its buds and flowers.

4,933

LILY PLANT: LILIUM 'UTOPIA'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Sandy, Oreg.

Filed Apr. 29, 1981, Ser. No. 258,743
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant, substantially as herein shown and described, characterized by its rapid natural propagation under field conditions; its vigorous and healthy growth when forced under glass; its regular and attractive inflorescence; the brilliant lemon yellow color of its buds; the large size of its flowers; the great width and thickness of its tepals; the inconspicuous character of its tepal spotting; the brilliant lemon yellow color of its flowers; and the long life of its flowers.

4,934

AFRICAN VIOLET NAMED BLUEBIRD

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan-American Plant Company, Parrish, Fla.

Filed Apr. 9, 1981, Ser. No. 252,317
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct African Violet cultivar, substantially as herein shown and described, characterized by its profuse production of flowers of a dark violet color.

4,935

AFRICAN VIOLET NAMED FAIRY QUEEN

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan-American Plant Company, Parrish, Fla.

Filed Apr. 9, 1981, Ser. No. 252,615
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new African Violet plant, substantially as herein shown and described, characterized by its profuse production of white flowers, the petals of which are bordered by a narrow pink and ruffled edge. The plant has a vigorous growth habit with abundant foliage which has a unique wavy or ruffled margin.

4,936

CARNATION NAMED STAGOLD

Maurits C. van Staaveren, 30 Hornweg, at 1432 GM, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij and M. C. van Staaveren, both of Aalsmeer, Netherlands

Filed Jan. 15, 1981, Ser. No. 225,331
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as herein shown and described, characterized by its high productivity of bright yellow flowers borne singly on rigid, erect pedicels carried in spray arrangement on a sturdy, upright peduncle.

4,937

CARNATION NAMED STASALM

Maurits C. van Staaveren, 30 Hornweg, at 1432 GM, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij and van Staaveren, M. C., both of Aalsmeer, Netherlands

Filed Jan. 15, 1981, Ser. No. 225,332
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—71 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as herein shown and described, characterized by its whitish pink flowers borne singly on sturdy, upright pedicels carried on long, strong peduncles, and by its abundant production of blooms.

4,938

POINSETTIA NAMED V-14 WHITE

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Apr. 20, 1981, Ser. No. 255,822
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinctive poinsettia cultivar, substantially as herein shown and described, distinguished by its many bracts of solid white color in overlapping arrangement and tightly centered about the flower cluster; this plant having substantially the identical physical characteristics and growth habits of its parent plant.

PATENTS

GRANTED NOV. 9, 1982

ERRATA

For CLASS	See PATENT NO.
464–008	4,357,810
374–197	4,357,831
420–449	4,358,318
525–192	4,358,402
524–745	4,358,403
378–101	4,358,683
378–098	4,358,684

PATENTS

GRANTED NOVEMBER 9, 1982

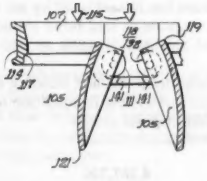
GENERAL AND MECHANICAL

4,357,714
FABRIC ARTICLES AND THE MANUFACTURE THEREOF
Mitsuru Ito, 322 E. 55th St., Apt. 3B, New York, N.Y. 10022
Filed May 2, 1980, Ser. No. 145,647
Int. Cl.³ A41D *1/02, 27/02*
U.S. Cl. 2—97 **16 Claims**

1. A method of manufacturing a fabric article comprising providing a piece of stretch fabric and a piece of woven non-stretch fabric in superposed relationship, and securing the two pieces of fabric together in stretch-resisting manner along first and second lines which are transverse to each other and oblique to both the warp and weft directions of the woven fabric.

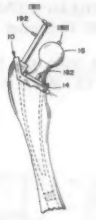
6. A fabric article comprising a piece of stretch fabric and a piece of woven non-stretch fabric in superposed relationship, the two pieces of fabric being secured together in stretch-resisting manner along first and second lines which extend transversely to each other and oblique to both the warp and weft directions of the woven fabric.

4,357,715
HEART VALVE PROSTHESIS
Jerome J. Klawitter, New Orleans, La., assignor to Hemex Incorporated, Austin, Tex.
Continuation-in-part of Ser. No. 111,488, Jan. 14, 1980, Pat. No. 4,328,592. This application Oct. 20, 1980, Ser. No. 198,446
Int. Cl.³ A61F *1/22*
U.S. Cl. 3—1.5 **8 Claims**



1. A heart valve prosthesis comprising
an annular valve body having a central passageway therethrough designed to be mounted to permit the flow of blood therethrough in a predetermined downstream direction, and
a pair of leaflets which are supported for substantially pivotal movement on eccentric axes between a closed position blocking blood flow through said central passageway and an open position allowing blood flow therethrough in said predetermined downstream direction,
said leaflets and said valve body including projecting guides and depressions which receive said guides,
said depressions and said projecting guides having complementary surfaces which mount said leaflets in a manner to allow pivotal movement relative to said annular valve body,
said depressions being elongated so that there is relative rotational and translational movement of said guides within said depressions as said leaflets pivot between the open position and the closed position,
said guides each having projections which are received in slot means formed as a part of said depressions which maintain a centered alignment of said guides within said depressions during opening and closing movement.

4,357,716
DEVICE AND METHOD FOR CEMENTING A HIP PROSTHESIS IN A FEMORAL CANAL
Byron L. Brown, 2315 Hendricks, Ft. Smith, Ark. 72903
Continuation-in-part of Ser. No. 167,070, Jul. 9, 1980, abandoned. This application Dec. 22, 1980, Ser. No. 218,763
Int. Cl.³ A61F *1/00, 1/24*
U.S. Cl. 3—1.913 **34 Claims**



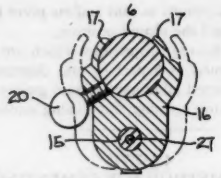
1. A device for cementing a femoral stem hip prosthesis having a head, neck, collar and stem in a prepared femoral canal comprising:
(a) means for mounting said femoral stem of said prosthesis in said femoral canal in a rigid relationship, and
(b) means independent of said prosthesis and coupled to said mounting means for introducing cement into said canal about the periphery of said stem for cementing said prosthesis stem in said canal while in said right relationship whereby a strong bond is obtained between said prosthesis stem and said femur.

18. A method of cementing a femoral stem hip prosthesis in a prepared femoral canal, said prosthesis comprising a head, neck, and stem, said method comprising the steps of:
(a) inserting the stem of said prosthesis in said prepared femoral canal,
(b) attaching said prosthesis to said femur in a rigid relationship, and
(c) introducing cement into said canal independent of said prosthesis and about the periphery of said stem for cementing said prosthesis stem in said canal while said prosthesis is maintained in said rigid relationship.

4,357,717
SPORTS IMPLEMENT HANDLE-HOLDING ATTACHMENT FOR PROSTHESIS
Earl M. Puhl, 3807 S. 18th St., Milwaukee, Wis. 53221
Filed Feb. 17, 1981, Ser. No. 234,611
Int. Cl.³ A61F *1/06*
U.S. Cl. 3—12.8 **10 Claims**

1. A sports implement handle-holding attachment for an amputee's prosthesis comprising:
(a) a rigid inner portion for connection to the prosthesis,
(b) a rigid outer portion for connection to the sports implement handle,
(c) and a non-rigid central portion connecting said inner and outer portions in co-axial relationship,
(d) said central portion being sufficiently stiff to normally

hold said inner and outer portions in fixed co-axial positions but being sufficiently flexible so that, during swing-



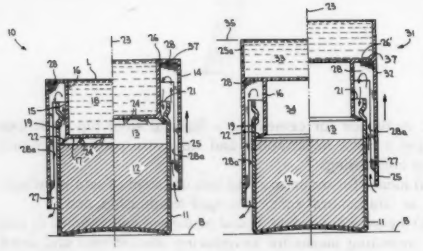
ing of the implement handle, it will freely flex throughout 360° to provide relative angular movement between said inner and outer portions in a simulated wrist-like action.

4,357,718

LIQUID DISPENSER

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed Jun. 25, 1980, Ser. No. 162,880
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—228 **9 Claims**



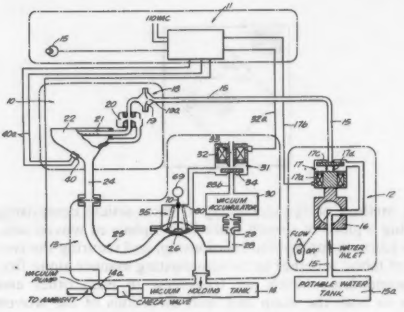
1. A liquid dispenser for a flush tank, comprising, a container having a quantity of concentrated soluble material therein capable of being dispensed as a liquid concentrate, said container having a top opening, a dispensing closure having a piston depending through said top opening, said piston defining an upwardly open cavity to be filled with tank liquid and having a predetermined center of gravity, said closure being adapted to rise and fall with the fluid level in the tank respectively during tank refill and flushing operations, cooperating stop means on said closure and on said container for limiting the upward and downward strokes of said piston, said closure having a depending wall surrounding said container during both said upward and downward strokes of said piston, said piston and said wall being spaced from opposite sides of said container to define a flow passage between the interior and exterior of said container during both said upward and downward strokes, means defining a plurality of air pockets between upper portions of said piston and said wall, said air pockets defining a center of flotation lying upwardly of the center of gravity of the water—filled piston, at least one bore in said closure outwardly of said piston for venting said passage, whereby liquid may flow into said container through said vented passage for mixing with an amount of the material therein during said upward stroke, and the mixed material may be expelled from said container during said downward stroke as said piston forces the mixed material through said passage and as the mixed material is flushed out of said passage by the receding tank fluid flowing through said vent, and whereby a separation between the interior and exterior of said container is effected by said air pockets to thereby prevent any migration of the material into the tank between flushes.

4,357,719

NON RECIRCULATING METHOD OF DISPOSING OF WASTE PRODUCTS FOR AIRCRAFTS

Everett H. Badger, Irvine, and Michael J. Rogerson, Newport Beach, both of Calif., assignors to Rogerson Aircraft Controls

Division of Ser. No. 68,131, Aug. 20, 1979, Pat. No. 4,275,470, which is a continuation of Ser. No. 58,586, Jul. 18, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,511
Int. Cl.³ B64D *11/02*
U.S. Cl. 4—316 **17 Claims**



1. A non-recirculating method of disposing of waste products in aircraft which has a waste receiving bowl, a waste holding tank, a drain line connecting said bowl and said holding tank, and a valve means having a valve element for opening and closing said drain line, comprising the following steps:

a. creating a vacuum in said waste holding tank and said drain line,

b. utilizing said valve element for opening or closing said drain line,

c. applying fluid pressure directly to an outer surface of said valve element to move the same into a drain line closing position,

d. applying a vacuum directly to the outer surface of said valve element to move said valve element into a drain opening position,

e. closing said drain line near said bowl by said valve means so that no vacuum is applied to said bowl,

f. opening said drain line to said bowl by use of said vacuum so as to apply vacuum to said bowl to suck the contents from said bowl and deliver same to said waste holding tank, and

g. again closing said drain line and building up said vacuum in order to place said system in condition for a subsequent operation of said disposal system.

4,357,720

FLUSH VALVE MOUNTING FOR TOILETS

Paul Stähli, Jona, Switzerland, assignor to Geberit AG, Jona, Switzerland

Filed Jun. 16, 1980, Ser. No. 159,975
Claims priority, application Switzerland, Dec. 18, 1979, 11222/79
Int. Cl.³ E03D *1/34*
U.S. Cl. 4—378 **4 Claims**

1. Flush valve mounting for a flush tank, comprising

(a) a housing having in its lower portion at least one window with a through-flow opening;

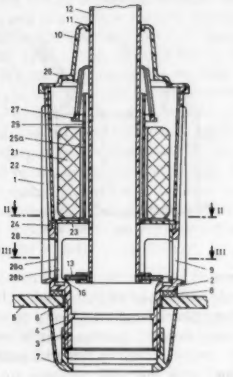
(b) a float container contained in said housing and having a floor;

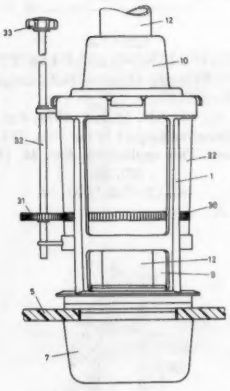
(c) a float in said float container cooperating with an abutment attached to a pipe having said housing, said float container and said float coaxially mounted thereon;

(d) a valve plate for a flush valve mounted on the lower end of said pipe, and causing said valve to open when said pipe

is lifted, said valve remaining in open position until said float container is substantially empty of water;

(e) adjustable means being provided for diminishing the size of said through-flow opening of said at least one window, said adjustable means comprising a downwardly extending annular wall beneath said floor of said float container, said wall having flow-through openings separated be webs, said float container being rotatable relative to said housing, whereby said webs are caused to cover at least a portion of said windows.





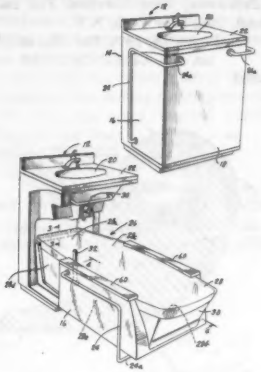
4,357,721

BATHING ASSEMBLY

Babette B. Newburger, 180 E. 79th St., New York, N.Y. 10021

Continuation of Ser. No. 887,762, Mar. 17, 1978, abandoned.
This application Jan. 24, 1979, Ser. No. 6,102
Int. Cl.³ A47K *3/06*
U.S. Cl. 4—585 **21 Claims**

1. A collapsible bathing assembly comprising a flexible liner defining a bathtub and generally having end and side walls and a bottom, a cabinet for housing the liner therein, said cabinet including first support means for supporting a first end of said liner, rigid side walls pivotally joined to said cabinet for supporting said liner side walls and by pivoting action moving said liner into and out of said cabinet, and a rigid end wall pivotally attached to said side walls adjacent the bottom of the latter for collapsibly supporting a second end of said liner opposite said first end for collapsing of said second liner end onto the bottom of said liner.

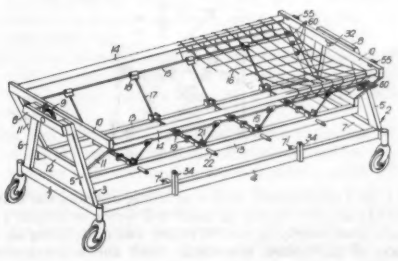


4,357,722

BED WITH ADJUSTABLY TENSIONABLE PATIENT SUPPORTING NET

Martin S. Thompson, Bickley, England, assignor to Egerton Hospital Equipment Limited, Bromley, England

Filed Apr. 1, 1980, Ser. No. 136,254
Claims priority, application United Kingdom, Apr. 5, 1979, 7912018
Int. Cl.³ A61G *7/10, 7/06*
U.S. Cl. 5—62 **19 Claims**

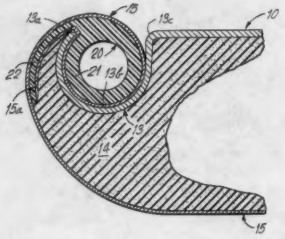


1. In a bed comprising a base frame, a support frame carried by the base frame for pivotal movement about an axis extending longitudinally thereof, and means for adjusting the pivotal position of the support frame relative to the base frame, the support frame comprising a pair of spaced parallel longitudinal members, and a supporting web extending across between said members, the improvement that the web is a net and that a plurality of adjusting means are provided at separate locations intermediate the ends of the bed and spaced along the length of the support frame for providing a continuous adjustment to vary the tensioning of the net at different locations spaced along the length of the support frame.

4,357,723
APPARATUS AND METHOD FOR UPHOLSTERING A RIGID CHAIR SHELL

Hyman L. Zelkowitz, West Norriton, Pa., assignor to Knoll International, Inc., New York, N.Y.

Filed May 18, 1979, Ser. No. 40,306
Int. Cl.³ A47C *7/24, 27/00*
U.S. Cl. 5—403 **8 Claims**

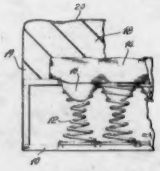


1. A connection comprising a retaining element attaching a flexible covering to a channel member, said retaining element comprising a length of flexible material having a central body portion and a flap integral with said central body portion, said flap being spaced from and extending adjacent to and at least partially circumferentially about an external surface of said central body portion, said channel member having a free edge, said central body portion of said retaining element being positioned within said channel member with at least part of said flap being positioned outside said channel member and said free edge of said channel member being positioned between said flap and said central body portion.

4,357,724
PNEUMATIC CORE FOR ADJUSTABLE FIRMNESS OF MATTRESSES, CUSHIONS AND THE LIKE

Guy Laforest, 7752 Place Arundel, Anjou, Canada (H1K 3S6)

Filed Jul. 24, 1980, Ser. No. 172,004
Int. Cl.³ A47C *27/08, 23/04*
U.S. Cl. 5—449 **2 Claims**



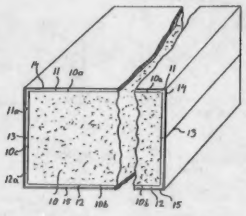
1. In a combination with a mattress, cushion, car seats and the like articles, having an inner coil spring structure, a pneumatic core overlying said structure and comprising an upper sheet of rubberized, non-elastic cloth and a lower sheet of flexible, elastic rubber forming a plurality of protrusions inserted in the openings of the coil springs of said inner coil spring structure.

4,357,725
BODY-SUPPORT DEVICES

Lars G. W. Ahlm, Fjäras, Sweden, assignor to AB Wilh. Becker, Stockholm, Sweden

Filed Dec. 28, 1979, Ser. No. 108,169
Claims priority, application Sweden, Oct. 1, 1979, 7900237
Int. Cl.³ A47C *27/15*
U.S. Cl. 5—468 **9 Claims**

1. A bed mattress or cushion, comprising a relatively thick core made of a soft, resilient plastics material with predominantly open cells and having a substantially parallelepipedic shape with two, substantially rectangular, mutually opposite major surfaces and two longside surfaces and two shortside surfaces extending between said major surfaces, said major surfaces and said longside surfaces of said core being covered with a relatively thin layer of a soft, resilient plastics material

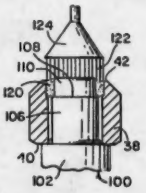


with predominantly closed cells bonded to said major surfaces and said longside surfaces of said core, said relatively thin layer of a soft, resilient plastics material being covered with a thin, substantially impermeable, plastics foil bonded to said thin layer of a soft, resilient plastics material with predominantly closed cells, and said shortside surfaces of said core being exposed to the ambient air.

4,357,726
METHOD OF MAKING SELF-LOCKING NUT

Paul A. Trimmer, Berkeley Heights, N.J., assignor to Amerace Corporation, New York, N.Y.

Division of Ser. No. 884,638, Mar. 8, 1978, Pat. No. 4,282,913, which is a continuation-in-part of Ser. No. 781,485, Mar. 25, 1977, abandoned. This application Apr. 24, 1981, Ser. No. 257,200
Int. Cl.³ B21D *53/24*
U.S. Cl. 10—86 A **13 Claims**



1. A method of making a prevailing torque type self-locking nut by producing a locking bushing of thread impressionable thermoplastic material in a metallic nut body having first and second opposite ends, an internal screw thread of predetermined nominal major and minor diameters between said ends and a well portion extending axially from said second end toward said thread and in open communication with said second end and with said thread, said well portion having a circumferentially continuous cylindrical internal surface coaxial with and facing the nut thread axis and of diameter greater than one-half the major thread diameter, said method being carried out with the aid of a pin having a nut body support surface, a cylindrical sealing portion of diameter just small enough to be received within said thread, a cylindrical cavity-defining portion coaxial with and of smaller diameter than the sealing portion and an annular sealing shoulder facing in generally the same direction as said nut body support surface and joining said cylindrical portions, said method comprising the steps of placing said nut body, said first end first, on said pin until said first end rests on said nut body support surface, said sealing portion is within said thread and said cavity-defining

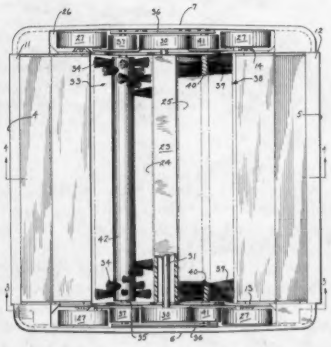
portion is at least partly within the well portion of said nut body to establish with the internal surface of the well portion an upwardly-facing annular cavity completely surrounding the thread axis and open at said second end of said body, depositing powder of said thermoplastic material in said cavity by dropping powder into said cavity completely to fill the cavity, thereafter heating the so deposited powder until all of it has become molten and is a unitary mass in wetting contact with said internal surface of said well portion throughout the circumference and axial extent thereof but is spaced radially outwardly of the location occupied by the cavity-defining portion of said pin, cooling said nut body so that the thermoplastic material solidifies, to provide said locking bushing having a cylindrical external surface secured by adhesion to said internal surface of said well portion and an internal surface confronting and surrounding and substantially coaxial with the thread axis and spaced therefrom a distance less than one-half the major thread diameter and removing the nut from the pin in the direction opposite that in which the nut body was placed on the pin after the powder starts to melt.

4,357,727

DUAL BRUSH FLOOR SWEEPER

David E. McDowell, Grand Rapids, Mich., assignor to Bissell, Inc., Grand Rapids, Mich.

Filed Dec. 4, 1980, Ser. No. 212,866
Int. Cl.[3] A47L *11/32*
U.S. Cl. 15—41 R **2 Claims**



1. In a floor sweeper, the combination comprising:

(a) front and rear dust pans forming debris receiving areas,

(b) front and rear rotary floor contacting brush rollers disposed between and adjacent the respective front and rear dust pans, said rollers mounted to continuously rotate in opposite directions with a floor cleaning action to sweep up and deliver debris from the floor directly to the corresponding debris receiving areas upon both fore and aft reciprocal translation of the sweeper over the floor,

(c) said front brush roller comprising a core having off center bristle tufts which are arranged in spiral fashion and staggered with the bristles mounted in said core to extend outwardly therefrom at an angle to a radial direction and at an angle to the circumferential core surface, said front brush roller mounted to contact and free wheelingly rotate on the floor in a direction to deliver debris to said front dust pan upon forward translation of the sweeper over the floor,

(d) said rear brush roller including a twisted wire axle having closely arrayed untufted bristles extending generally radially therefrom, said rear brush roller mounted to freely roll on the floor in a direction to deliver debris to said rear dust pan upon rearward translation of the sweeper over the floor,

(e) wherein the rate of said free wheeling rotation of said front brush roller is about 2½ times the rate of said free rolling rotation of said rear brush roller,

(f) and means;

(1) to drive said front brush roller in the direction of its aforementioned free wheeling rotation to deliver debris to said front dust pan upon rearward translation of the sweeper over the floor,

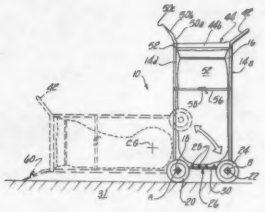
(2) and to drive said rear brush roller in the direction of its aforementioned free rolling rotation to deliver debris to said rear dust pan upon forward translation of the sweeper over the floor.

4,357,728

DUST PAN AND REFUSE CONTAINER

John P. Pravettone, 23807 Karen, Warren, Mich. 48091

Filed Jul. 24, 1980, Ser. No. 171,976
Int. Cl.[3] A47L *13/52*
U.S. Cl. 15—257.4 **7 Claims**



1. A portable dust pan and refuse container for collecting and transporting refuse material in a disposable open-mouthed, elongated, flexible collection bag comprising:

a bag support platform for supporting the bottom of the bag and having a front edge and a rear edge;

a front bag support wall and a rear bag support wall respectively connected to the front and rear edges of the bag support platform and extending generally perpendicularly therefrom in spaced apart relation from one another to define lateral side openings through which a bag filled with refuse may be removed therefrom;

a bag support chute mounted on the front bag support wall and the rear bag support wall and spaced from the platform at a distance generally equal to the height of the disposable bag;

means for releasably securing a bag on the bag support chute with the open-mouth of the bag extended and registered with the bag support chute for entry of refuse material therein;

first and second bag restraining means extending respectively between the front bag support wall and the rear bag support wall intermediate the bag support platform and the bag support chute to provide effective lateral side restraint of the bag within the bag nesting area between the front and back bag support walls, at least one of said bag restraining means being releasable to enable subsequent removal of the filled refuse bag through the lateral opening;

a pair of spaced ground contacting wheels rotatably mounted on the container about an axis generally adjacent the leading edge of the bag support platform to permit selective rotational repositioning of the container about said axis from a first substantially vertical refuse transporting position to a second substantially horizontal refuse collecting position; and

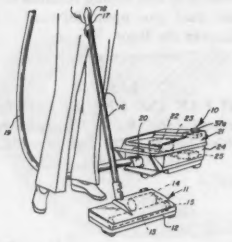
a dust pan carried by the container and projecting outwardly from the bag support chute and operating to abut the ground when the container is in the refuse collecting position whereby refuse material may be swept into the disposable bag.

4,357,729

VACUUM CLEANER CONTROL

Donald R. Vander Molen, and Roger L. Nyland, both of Lincoln Township, Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 26, 1981, Ser. No. 228,279
Int. Cl.³ A47L 9/28
U.S. Cl. 15—319 **36 Claims**



27. In a vacuum cleaner having a suction unit including a suction motor arranged to draw a first full load current, a floor cleaning unit including a brush rotatably driven by a brush motor arranged to draw a second full load current, and a suction hose connected between the suction unit and the floor cleaning unit and having a handle and electrical conductors extending in parallel lengthwise of said suction hose, the improvement comprising:

an "On-Off" switch carried by said handle and connected to at least one of said hose conductors;

brush motor conductors carried by said floor cleaning unit for providing controlled energization of said brush motor by said "On-Off" switch; and

control means carried by said suction unit and handle responsive to said "On-Off" switch for causing energization of said suction motor concurrently with energization of said brush motor, said control means including a gated electronic switch in series with said suction motor and circuitry connected to said "On-Off" switch to be responsive to a condition of said "On-Off" switch causing current flow through said brush motor to cause said gated switch to effect said energization of the suction motor by reducing the current draw of said suction motor, three said electrical conductors being provided in association with said suction hose, and said "On-Off" switch comprising a single pole single throw switch connected between one of said electrical conductors and said suction motor.

4,357,730

PORTABLE CLEANING APPARATUS

Franz Lex, Annenstrasse 6, 8020 Graz, Austria

Filed Mar. 11, 1980, Ser. No. 129,455
Claims priority, application Austria, Mar. 13, 1979, 1898/79
Int. Cl.³ A47L 5/26
U.S. Cl. 15—344 **7 Claims**

1. Portable cleaning apparatus, comprising:

a casing;

at least two rotatable cleaning members at least partially mounted within said casing;

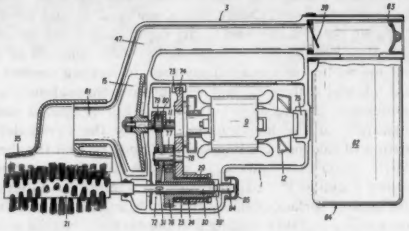
an electrical driving motor and step-down gearing for rotating said at least two cleaning members;

said casing forming a suction inlet therein;

a removable cover mounted on said suction inlet and partially covering said at least two cleaning members;

a vent channel formed within said casing and having an inlet communicating with said suction inlet;

a blower driven by said electrical driving motor and providing suction from said at least two cleaing members into said suction inlet and to a dust collector; and



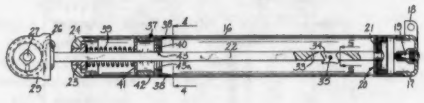
said at least two cleaning members being rotated in opposite directions to direct dust between said at least two rotatable cleaning members and towards said suction inlet.

4,357,731

DOOR CLOSER WITH HOLD OPEN FEATURE

Leopold Strauss, East Rockaway, N.Y., assignor to Leigh Products, Inc., Grand Rapids, Mich.

Filed Jan. 17, 1980, Ser. No. 113,102
Int. Cl.³ E05F 3/02, 3/22
U.S. Cl. 16—70 **8 Claims**



1. A door closer of the dashpot type comprising a piston having a rod and a cylinder each adapted to be pivotally mounted to one of a door and a door frame, a latch adapted to hold the rod of said piston in an extended position when the door is opened, a latch engaging member enclosed within said cylinder and having an opening therein, said piston rod extending through said opening of said latch engaging member in said cylinder, means pivotally mounting said latch to said piston rod, latch actuating means reponsive to predetermined extension of said piston rod for pivoting said latch into a position of engagement with said latch engaging member and thereby preventing retraction of said piston rod, said latch actuating means being effective to further pivot said latch to a disengaging position upon further extension of said piston rod.

4,357,732

AUTOMATIC DOOR CLOSER KIT

David H. Hickman, 6514 E. 74th St., Tulsa, Okla. 74133

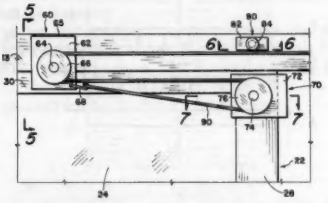
Filed Dec. 10, 1979, Ser. No. 102,144
Int. Cl.³ E05F 1/00
U.S. Cl. 16—81 **3 Claims**

1. An automatic door closer kit for a sliding door assembly comprising a doorway having first and second vertical jambs, said jambs being horizontally spaced, an upper horizontal lintel connecting across said jambs and having two downwardly extending parallel rails, said doorway frame defining a vertical plane, a stationary panel mounted within said plane adjacent said second jamb, a movable rectangular door having an upper leaf, a lower leaf, first and second vertical stiles with said first stile being adjacent said first jamb when said movable door is in a closed position, the upper leaf of said movable door being received within said rails of said lintel so that said door is slidably mounted within said plane of said doorway frame; said door closer kit being gravity actuated and comprising;

a counterbalance having an adjustable weight capacity,

an anchor pulley mechanism including a first L-shaped base having a first outwardly extending post mounted on the inside of the L, a grooved anchor pulley wheel rotatably mounted on said first post, double-faced adhesive tape mounted on the outer surfaces of said first base for attachment of said first base to one of said rails and to said lintel,

a traveling pulley mechanism including a second L-shaped base having a second outwardly extending post mounted on the outside of the L, a grooved traveling pulley wheel rotatably mounted on said second post, double-faced adhesive tape mounted on the inner surfaces of said second base for attachment of said second base to said second stile;



a lifting pulley mechanism including a third base in the form of a four-sided box, a third post extending outwardly from the outer side surface of one of the sides of said box, a grooved lifting pulley wheel rotatably mounted on said third post, double-faced adhesive tape mounted on the outer surfaces of the other three sides of said third base for attachment of said third base to said second jamb, to said lintel and to said frame, and

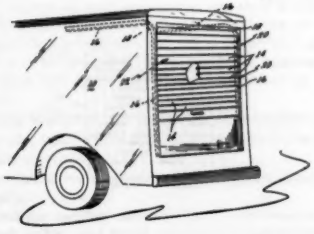
a cord having one end thereof attached to said counterbalance, said cord being entrained over said lifting pulley then about said anchor pulley and about said traveling pulley, the other end of said cord being secured to said first base.

4,357,733

SHOCK ABSORBING ROLLER

Donald Neville, Malibu, Calif., assignor to Plastiglide Manufacturing Corporation, Hawthorne, Calif.

Filed Jun. 23, 1978, Ser. No. 918,392
Int. Cl.³ E05D *13/02*
U.S. Cl. 16—107 **13 Claims**



1. A shock absorbing roller mounted on a shaft and for movement along a U-shaped track having first and second oppositely disposed walls interconnected by an end wall, including

a central hub portion and with the hub portion for mounting the roller on the shaft,

a peripheral roller portion surrounding the hub portion and including means interconnecting the roller portion and the hub portion for supporting the roller portion,

the roller portion including a circumferential ring spaced around the hub portion and having a cylindrical outer surface and a flexible circumferential flange section extending outwardly from one side of the circumferential ring toward the first and second oppositely disposed walls for providing contact with the first and second walls of the track and with the flexible circumferential flange section providing shock absorption and noise reduction with movement of the roller along the track, and

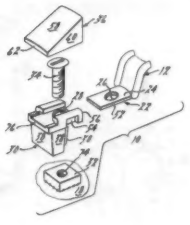
at least one flexible thrust flange extending outwardly from the other side of the circumferential ring toward the end wall of the track and with the flexible thrust flange providing shock absorption and noise reduction with any contact of the roller with the end wall of the track from side to side movement of the roller across the track.

4,357,734

STAND-OFF MOUNTING SYSTEM FOR ASSIST STRAPS

Ronald D. Moore, Grosse Pointe, Mich., assignor to Chivas Products, Limited, Sterling Heights, Mich.

Filed Jun. 5, 1980, Ser. No. 156,760
Int. Cl.³ A47B *95/02*
U.S. Cl. 16—125 **15 Claims**



1. An assist strap for attaching onto a surface comprising:

a strength-imparting member extending the length of said assist strap, said strap having an end;

an anti-rotation member engaging said end of said assist strap and cooperative with said surface for resisting substantial rotation of said end relative to said surface, said anti-rotation member including a pair of flanges for overlying said end of said assist strap and being configured to allow insertion of said end into a cooperative anti-rotation relationship therewith with said flanges overlying said end of said assist strap;

a first fastener securing said end and said anti-rotation member to said surface;

a cover cooperating with said anti-rotation member for concealing the entirety of said anti-rotation member, said end, and said first fastener.

4,357,735

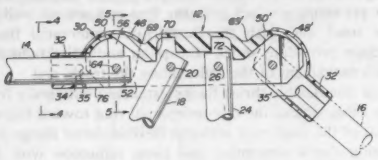
BALL AND SOCKET SAFETY HINGE

David Saint, Elverson; James Eldon, III, Barto, and Thomas L. Latone, Quakertown, all of Pa., assignors to Graco Metal Products, Inc., Elverson, Pa.

Filed Jun. 5, 1981, Ser. No. 270,768
Int. Cl.³ E05D *5/08*
U.S. Cl. 16—224 **10 Claims**

1. A safety hinge to obviate pinching of fingers comprising a bracket, a rod member having one end directly pivoted to one end of the bracket by a transverse pin, the rod member having a cover at said one end, the bracket and cover being U-shaped

in transverse section at said pin, a portion of the cover overlying a portion of said one end of the bracket in all positions of



the cover, said cover being journaled on bosses on said bracket, the bosses circumscribing a portion of the pin.

4,357,736

PALLET CAGE HINGE

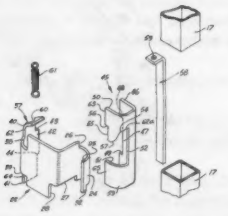
Ladislav S. Karpisek, 86 Woodfield Blvd., Caringbah, N.S.W., Australia

Filed May 19, 1981, Ser. No. 265,228

Claims priority, application Australia, May 23, 1980, PE3702; May 30, 1980, PE3801; Aug. 27, 1980, PE5279; Sep. 25, 1980, PE5746; Dec. 31, 1980, PE7097; Feb. 3, 1981, PE7448

Int. Cl.³ E05D *7/10*

U.S. Cl. 16—263 **9 Claims**



1. A hinge of separable parts comprising a leaf part including a body to be mounted on a door and a pin part to be mounted on a support from which the door is to be swung, the leaf part having a hooked end portion to provide extended engagement with a pivot pin in said pin part; characterized by a lug upstanding from one end (the lower end) of said hooked portion and spaced from the body and a notch in said one end of the hooked portion adjacent the body, said pin part including a pivot pin, first restraining means spaced radially from the pivot pin to restrain the hooked portion from radial disengagement in a first direction from the pivot pin when hooked thereabout, and lying between said first restraining means and said pivot pin, upper stop means to be engaged by the other end (the upper end) of the hooked portion to prevent longitudinal upward movement between the hooked portion and the pivot pin during a first arc of pivotal movement of the leaf part relative to the pin part, lower stop and support means at the opposite side of the pivot pin to the upper stop means to be engaged by the lug on the hooked portion to limit the amount of pivotal movement of the leaf part relative to the pin part in a door opening operation and to support the lower end of the hooked portion during at least part of the pivotal movement of the leaf part relative to the pin part, second restraining means spaced radially from and adjacent to the lower stop means to restrain the hooked portion from radial movement in a second direction and of a height such that it will pass through the notch in the lower end of the hooked portion during pivotal movement of the leaf part relative to the pin part and of a height such that after said first arc of movement has been completed and the leaf part is raised the hooked portion can be moved in said second direction by passing the lower end of the hooked portion over the top of the second restraining means to separate the hooked portion from the pivot pin.

4,357,737

METHOD AND APPARATUS FOR OPENING TEXTILE FIBER BALES

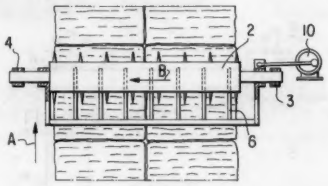
Hans-Jürgen Marx, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 85,476, Oct. 17, 1979, Pat. No. 4,281,437. This application Jan. 28, 1981, Ser. No. 229,137

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847460

Int. Cl.³ D01C *7/06*

U.S. Cl. 19—80 R **6 Claims**



1. In a method of opening fiber bales with an apparatus having a grate including parallel-spaced grate bars pressing on a surface of the bales; an opening member having opening elements projecting through the clearance defined by adjoining grate bars and penetrating into the bale for removing fibers therefrom; including the steps of propelling said opening member in back-and-forth passes above the bales relative thereto and in a direction parallel to the grate bars and to said surface of the bales; said surface being a substantially horizontally extending top surface of the bales; and maintaining the bales stationary; the improvement comprising the step of varying the position of said grate substantially in a horizontal direction transversely to the direction of back-and-forth travel of the opening member and relative to said opening member and said top surface.

4,357,738

CARD CLOTHING FOR CARDING MACHINES

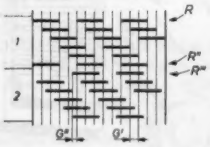
Werner Siegrist, Jona, Switzerland, assignor to Graf & Cie. A.G., Rapperswil, Switzerland

Filed Aug. 19, 1980, Ser. No. 179,540

Claims priority, application Switzerland, May 29, 1980, 4200/80

Int. Cl.³ D01G *15/84*

U.S. Cl. 19—114 **6 Claims**



1. A card clothing for carding machines, including a plurality of flexible card wires consisting of staple shaped wire sections of a predetermined wire gauge and each including a pair of legs integrally connected to each other by the staple crown, said legs defining teeth and said staple crown defining the base web of each card wire section, said teeth defining lanes extending in the direction of the flow of the fibers to be carded relative to the card clothing, said card wires being disposed in a pattern-like arrangement into a card fillet, said teeth being arranged in a plurality of groups arranged consecutively relative to said direction of fiber flow, each group comprising a

plurality of rows of teeth in a diagonal stitch pattern with each row of teeth defining a line extending perpendicularly to said direction of fiber flow, a given row of teeth in one group being displaced relative to a given row of teeth in another group in said direction of fiber flow, a distance measured perpendicularly to said direction of fiber flows which does not exceed said wire gauge, such that said card clothing comprises no free lanes.

4,357,739

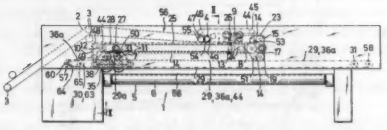
APPARATUS FOR LAYING FIBER FLEECES OR THE LIKE ON A MOVING WITHDRAWAL BELT

Eduard Hille, Dülmen, Fed. Rep. of Germany, assignor to Hergeth KG Maschinenfabrik und Apparatebau, Dülmen, Fed. Rep. of Germany

Division of Ser. No. 919,012, Jun. 26, 1978, Pat. No. 4,194,270, which is a continuation of Ser. No. 775,022, Mar. 7, 1977, abandoned. This application Feb. 5, 1980, Ser. No. 118,827

Int. Cl.³ D04H *11/04*

U.S. Cl. 19—163 **6 Claims**



1. A device for uniformly laying fiber fleeces or the like delivered from a carding machine or the like onto a belt driven at a predetermined speed, said device comprising

(a) a feed belt extending between rollers;

(b) support means;

(c) a storage car, a layer car and a balance car;

(d) means mounting each of said cars on said support means for oscillating movement along respective substantially parallel paths, the path of said balance car being spaced from the end of said feed belt, the path of said storage car being below said feed belt and the path of said balance car, and the path of said layer car being below the path of said balance car;

(e) a first continuous conveyor belt extending below the end of said feed belt between spaced rollers on said storage car for receiving and conveying fleece in one direction along a path from said feed belt;

(f) a second continuous conveyor belt extending in said one direction from at least one roller on said balance car, about one end of the path of said first conveyor belt on a plurality of rollers on said storage car and then in the opposite direction to at least one roller on said layer car;

(g) means for driving said feed belt and said first and second conveyor belts, said drive means being adapted to drive said feed belt and said first conveyor belt at the same speed;

(h) flexible tension means connecting said balance car to said layer car, said flexible tension means passing over a roller on said storage car;

(i) reversible drive means for oscillating said layer car along its path;

(j) an endless member mounted for travel about at least two spaced rollers and being operatively connected through transmission means on said layer car to said at least one roller on said layer car, one run of said endless member extending along the path of said layer car, said transmission means being adapted to drive said at least one roller in a single direction as said layer car oscillates along its path;

(k) further transmission means between said reversible drive means and one of said rollers about which said endless member passes, said further transmission means being adapted to drive said endless member such that said one run moves in one direction at twice the speed said reversible drive means moves said layer car as said layer car moves in said same one direction and to not drive said endless member as said layer car moves in the opposite direction; and

(l) a common continuous drive member extending from a roller driven by said first driven means about rollers at opposite ends of said storage car and about a roller on said layer car and driven in one direction by said transmission means on said layer car;

(m) whereby said storage car with said first conveyor belt oscillates along its path at half the speed said layer car oscillates along its path, when the speed of said layer car is the same as the speed of said feed belt said balance car remains stationary and when the speed of said layer car differs from the speed of said feed belt said common continuous drive member changes the speed of said storage car to maintain it at half the speed of said layer car and said balance car moves along its path in a direction opposite to that of said layer car to maintain said second conveyor belt under tension.

4,357,740

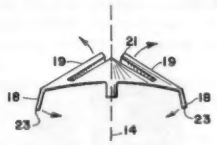
BAG CLOSURE DEVICE

Theodore G. Brown, 5735 Falconer Way, Sacramento, Calif. 95824

Filed May 18, 1981, Ser. No. 264,359

Int. Cl.³ B65D *77/10*

U.S. Cl. 24—30.5 S **2 Claims**



1. A closure device of integral construction fabricated of resilient material comprising a concave shell symmetrically shaped about a center line axis and having a circular base, a plurality of elongated slots in said shell equiangularly spaced about said axis and oriented within planes containing said axis, said slots cooperatively defining closely spaced prongs of substantially triangular configuration capable of gripping a plastic film positioned therebetween, and levers emanating outwardly from said base, said levers being positioned adjacent the perpendicular bisectors of said triangular prongs, whereby when said levers are grasped by hand and squeezed inwardly toward the interior of said circular base, said prongs are caused to move apart and thereby release a gripped plastic film.

4,357,741

REMOVABLE PANEL FOR A CASKET LID

Charles F. Winburn, Batesville, Ind.; William K. Craft; Gregory T. Keferl, both of Cincinnati, Ohio; Wilfred Scheele, Batesville, and Juanita Baker, Metamora, both of Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed Apr. 14, 1981, Ser. No. 254,085

Int. Cl.³ A61G *17/00*

U.S. Cl. 27—19 **22 Claims**

1. A decorative lining for a casket lid, the lining comprising:

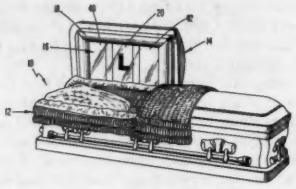
panel means bordered along at least two edges by framing means, and

fastening means for securing said panel means to said lid comprising:

a first tab secured to said panel means and projecting beyond one edge thereof, said first tab being insertable behind a first portion of said framing means located adjacent said one edge, and

a second tab secured to said panel by first attaching means

and projecting beyond an opposite edge of said panel means, said second tab being insertable behind a second portion of said framing means located adjacent said opposite edge, and



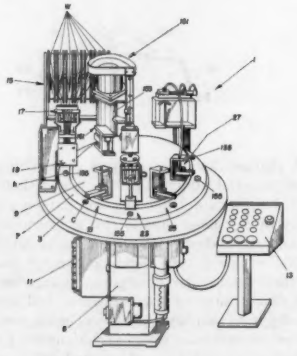
second attaching means disposed intermediate said first attaching means and said opposite edge for securing said panel means to said second tab in response to inward pressing of said panel means toward said second tab.

4,357,742

ELECTRIC BRUSH CONTACT FORMING APPARATUS

Charles P. Fischer; Andrew A. Peterson; Edward J. Doi, all of Sidney; Rodney W. Gossoo, Sidney Center, and Jan C. Mitrzyk, Sr., Unadilla, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed May 27, 1980, Ser. No. 153,352
Int. Cl.³ H01R *43/00, 43/12*
U.S. Cl. 29—33 M **12 Claims**



1. An apparatus for continuous production of electrical brush contacts having a plurality of wire segments, with acute angular exposed ends, secured in holder, comprising:

(a) means for feeding a plurality of wires from a plurality of rolls of wire independently of each other;

(b) means for simultaneously cutting a section from each of said plurality of wires to form a plurality of wire segments having acute angular ends and feeding said wires to a common collection point;

(c) means for cradling a holder for said plurality of wire segments, the holder being releasably positioned within the cradling means for receipt of said wire segments from the common collection point;

(d) means for loading said plurality of wire segments in said holder, with a portion of said wire segments having acute angular ends exposed;

(e) means for crimping said holder to retain said plurality of wire segments therein while preventing flaring of said exposed portions of the wire segments relative to each other, to form an electrical brush contact;

(f) means for ejecting brush contacts from said cradling means comprising an ejection pin and superimposed collection means for said contacts; and

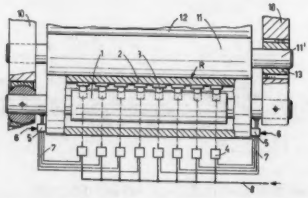
(g) means for checking said contacts to determine whether a correct number of wire segments are present in said contacts prior to said contacts reaching said ejection means.

4,357,743

CONTROLLED DEFLECTION ROLL

Josef Hefter, Fenken; Peter Heitmann, Ravensburg-Oberhofen; Christoph Link, Ravensburg; Hans-Joachim Schultz, Ravensburg-Oberhofen; Wolf-Gunter Stotz, Ravensburg, and Karl Volz, Baindt, all of Fed. Rep. of Germany, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed Jan. 8, 1981, Ser. No. 223,238
Claims priority, application Switzerland, Feb. 5, 1980, 898/80
Int. Cl.³ B21B *13/14, 29/00*
U.S. Cl. 29—116 AD **15 Claims**



1. A controlled deflection roll comprising:

a stationary roll support;

a roll shell rotatable about said stationary roll support;

support elements for supporting said roll shell at said roll support;

said support elements being movable in relation to the roll support, bearing upon said roll support and acting with a support force at the roll shell;

regulators provided for the support elements for influencing their support force;

said roll shell having opposed ends;

position feelers provided for the ends of said roll shell in order to determine the position of the roll shell in relation to the roll support and deviations of the roll shell from a predetermined reference position; and

said position feelers influencing said regulators of the support elements as a function of the deviation of the position of the roll shell from said predetermined reference position in a manner such that the roll shell is retained by the support elements at the region of the reference position.

4,357,744

METHOD OF CONNECTING INSULATED GLASS FRAME

Everett R. McKenzie, Rte. 3, and Thomas E. Smith, 2519 S. 6th St., both of Ironton, Ohio 45638

Filed Jun. 5, 1980, Ser. No. 156,755
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—451 **3 Claims**

1. A method of constructing between two glass panels an insulating space by using a first corner flexible connector with

a notch having a locking device, second corner flexible connector with a notch having a locking device, third corner flexible connector with a notch having a locking device, and fourth corner flexible connector with a notch having a locking device in conjunction with a first tubular member, second tubular member, third tubular member, and a fourth tubular member in end to end relation along the same longitudinal line, comprising:

functionally inserting said first corner connector into and between the adjacent ends of said first member and said second member lying along said line;

frictionally inserting said second corner connector into and between the adjacent and other end of said second member and the adjacent end of said third member;

frictionally inserting said third corner connector into and between the adjacent and other end of said third member and the adjacent end of said fourth member;

moving said first member and said second member into a generally right angle relationship with each other;

locking said first corner connector to maintain said generally right angle relationship between said first member and said second member;

moving said second member and said third member into a generally right angle relationship with each other;

locking said second corner connector to maintain said generally right angle relationship between said second member and said third member;

moving said third member and said fourth member into a generally right angle relationship with each other;

locking said third corner connector to maintain said generally right angle relationship between said third member and said fourth member;

frictionally inserting said fourth corner connector into and between the other ends of said first member and the adjacent said fourth member;

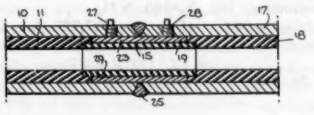
locking said fourth corner connector to maintain said generally right angle relationship between said fourth member and said first member, for use between glass panels.

4,357,745

METHOD OF WELDING LINED PIPE

Edmund M. Chlebowski, Southbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,351
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—460 **6 Claims**



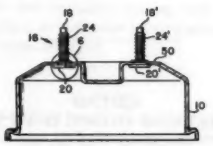
1. A method of joining lined pipe comprising providing two lengths of weldable metal pipe to be joined, said pipe having a lining of heat-destructable organic polymer terminating a definite distance from the end of each pipe length to be joined, providing a hollow sleeve member having an outside diameter less than the inside diameter of the pipe but at least as great as the inside diameter of the lining, the length of said sleeve being slightly in excess of the combined lengths of the two unlined sections of the pipe to be joined, positioning the two pipe lengths in butting relationship with the sleeve positioned concentrically within so as to bridge the joint between the two pipe lengths and form an annular hollow casting chamber defined on the outside by the unlined inner wall of the pipe and defined on the inside by the outer wall of the sleeve and defined at its ends by the terminus of the lining at least one unlined section of pipe being provided with a hole through its wall giving access to the said casting chamber, welding the pipe lengths together at the butt joint, the heat-destructable organic polymer lining being protected from excessive heat consequent to the welding step by the fact that the lining terminates a substantial distance from the welded joint, cooling the weld, filling the hollow casting chamber through said hole in the pipe wall with a curable organic liquid material and curing the liquid in situ to a solid polymeric state, and plugging the said hole.

4,357,746

STUD FOR BRAKE BOOSTER

Oswald O. Kytta, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 29, 1980, Ser. No. 191,890
Int. Cl.³ B21D *39/00*
U.S. Cl. 29—509 **2 Claims**



1. A method of attaching a stud to a housing comprising the steps of:

moving an end on the stud through an opening in the housing until a guide surface passes through the opening and an irregular surface contacts the housing adjacent one side of the opening;

holding the irregular surface adjacent the housing;

bringing a head on a tool into engagement with the guide surface;

rotating the head at a speed of between 1200 and 2000 revolutions per minute; and

applying a constant pressure to the guide surface through the head causing the guide surface to flare and engage the housing adjacent the other side of the opening, said constant pressure causing the material from the housing to flow into the irregular surface and establish a seal that prevents fluid communication through said opening and the stud from rotating when a torque is applied to said end.

4,357,747

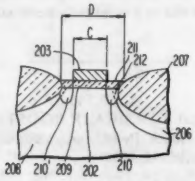
METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE HAVING AN INSULATED GATE TYPE FIELD EFFECT TRANSISTOR

Osamu Kurakami; Shigeru Koshimaru, and Takashi Yamanaka, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 942,729, Sep. 15, 1978, Pat. No. 4,268,847.
This application Sep. 30, 1980, Ser. No. 192,401
Claims priority, application Japan, Sep. 16, 1977, 52-112067; Sep. 16, 1977, 52-112068; Dec. 28, 1977, 52-158000
Int. Cl.³ H01L *21/26*
U.S. Cl. 29—571 **5 Claims**

1. A method for manufacturing a semiconductor device comprising the steps of forming an isolating region including a field oxide film on one major surface of semicondutor substrate of one conductivity type, forming a gate insulator film on said one major surface of said semiconductor substrate at a position surrounded by said isolating region, depositing on said gate insulator film a conductive film to provide a gate electrode, shaping the width edges of said gate electrode, and thereafter introducing impurities of said one conductivity type into said semiconductor substrate between the width edges of said gate

electrode and said field oxide film opposed thereto to form a channel stopper region so that a boundary line of said channel



stopper region is substantially in coincidence with said width edge of said gate electrode in the plane view.

4,357,748

FLUID FLOW SENSING SWITCH DEVICE METHOD OF MAKING THE SAME

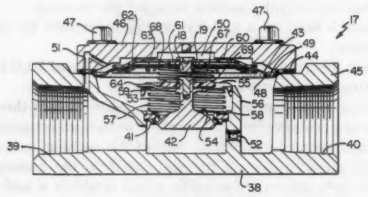
Charles D. Branson, and Roy C. Demi, both of Greensburg, Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 936,112, Aug. 23, 1978, Pat. No. 4,242,082. This application Sep. 11, 1980, Ser. No. 186,163

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.³ H01M *11/00*

U.S. Cl. 29—622 **9 Claims**



1. In a method of making a fluid flow sensing switch device having a housing means provided with a fluid flow passage therethrough defined by an inlet and an outlet separated by a valve seat controlled by a movable valve member that is operated by the pressure differential between said inlet and said outlet acting on a flexible diaphragm carried by said housing means, said device having an electrical switch construction operatively associated with said valve member and having contact means thereof actuated by said pressure differential acting on said flexible diaphragm, the improvement comprising the steps of mounting said contact means of said switch construction in said fluid flow passage so as to be exposed to fluid flow therethrough, forming said contact means to comprise a first part thereof and a second part thereof, said step of mounting said contact means comprising the step of mounting said first part of said contact means on said valve member and mounting said second part of said contact means on said diaphragm in spaced apart relation to said first part of said contact means and being positioned to make contact with said first part of said contact means to close said switch construction upon actuation of said switch construction, operatively interconnecting control means that is operated by said differential pressure to said contact means and to said valve member to operate the same. and forming said control means with means that actuates said contact means before said control means opens said valve member upon sensing a certain pressure drop between said inlet and said outlet.

4,357,749

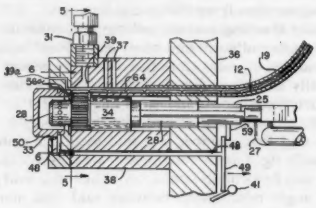
AUTOMATIC MACHINE FOR ASSEMBLING UNIVERSAL ROLLER BEARINGS

Heriberto R. Lira, 5150 S. Kostner, Chicago, Ill. 60632

Continuation-in-part of Ser. No. 40,493, May 21, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 210,128

Int. Cl.³ B21D *53/10;* **B23P** *19/04*

U.S. Cl. 29—724 **10 Claims**



1. An apparatus for sequentially greasing a bearing housing and loading a plurality of needle bearings in said bearing housing, said apparatus comprising a feed head having a same stationary greasing and loading position, grease feeding means for selectively injecting grease under pressure into said bearing housing, a bearing feed means for serially feeding bearings into said feed head, a channel for receiving a plurality of bearings juxtaposition to one another and in a circular pattern, bearing drive means mounted for reciprocating movement from a first position spaced from the bearings received in said channel to a second position engaging and driving said bearings into said housing, first means actuatable by the positioning of said bearing housing in the greasing and loading position of said feed head for activating said grease means to inject grease into said bearing housing, second means actuatable after activation of said grease means to deactivate said grease means and stop injection of grease into the bearing housing, said second means actuatable to activate said bearing drive means to move from its first position to its second position to engage and drive said needle bearings into said housing.

4,357,750

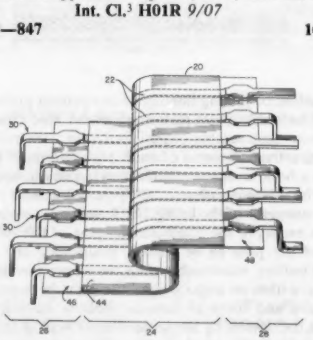
JUMPER CABLE

Barry I. Ostman, Merrimack, N.H., assignor to Advanced Circuit Technology Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 697,937, Jun. 21, 1976, abandoned. This application Apr. 12, 1977, Ser. No. 786,887

Int. Cl.³ H01R *9/07*

U.S. Cl. 29—847 **16 Claims**



1. A method of forming a jumper cable having a plurality of spaced metallic conductors, each of said conductors including a pair of spaced, relatively rigid ends, and at least one region of relative flexibility between said ends and integral therewith,

wherein said ends (1) are generally flat, (2) are thicker in cross-section than said at least one region of flexibility, and (3) derive their relative rigidity be virtue of their relative thicker cross-section, said method comprising the steps of:

(A) providing a relatively rigid metallic sheet of a cross-section thickness substantially equal to that required for said rigid ends;

(B) selectively reducing portions of said metallic sheet in cross-section so as to (i) increase the relative flexibility of said sheet at said region, and (ii) define in situ a plurality of spaced conductors; and

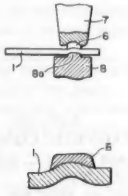
(C) covering said spaced conductors at least in part with a flexible insulating material while maintaining said conductors in spaced relation to one another.

4,357,751

ELECTRICAL CONTACT MANUFACTURING METHOD AND APPARATUS

Mamoru Akimoto; Kazushi Konno, and Toshimasa Hagyu, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Oct. 31, 1980, Ser. No. 202,507
Claims priority, application Japan, Nov. 6, 1979, 54-143534
Int. Cl.³ H01R *43/02*
U.S. Cl. 29—879 **7 Claims**



1. A method for manufacturing an electrical contact comprising the steps of:

lowering an electrical contact material in a form of a wire having a V-shaped end into contact with a base metal plate;

applying a depression force to said wire in the direction of said base metal plate;

passing a current through said wire and said base metal plate to weld a portion of said contact material on said base metal plate at a predetermined position;

cutting said wire at a point above said contact material portion weld after said current is passed therethrough to leave said contact material portion welded to said predetermined position on said base metal plate so as to leave said portion of said contact material on said base metal plate, said wire being cut so as to leave a substantially planar surface on a top of said contact material portion and a V-shaped surface on an adjacent portion of the wire;

depressing said portion of said contact material from above with an upper punch to mold an electrical contact; and

depressing a portion of said base metal plate with a lower punch directly below said portion of said contact material to raise said portion of said contact material.

4,357,752

SPRINKLER HEAD GRASS CLIPPER

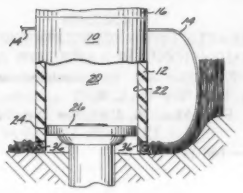
Walter E. Goodwin, Jr., 1725 Trinity Loop, Ontario, Calif. 91764

Filed Dec. 15, 1980, Ser. No. 216,157
Int. Cl.³ A01D *55/18*
U.S. Cl. 30—122 **10 Claims**

1. A sprinkler head grass clipper for coupling to a lawn trimmer rotor rotatable about a vertical axis, said clipper comprising:

a body adapted to fit over and engage a sprinkler head for maintaining said body in a predetermined clipping position during rotation of said rotor; and

cutting means comprising an element of relatively small, substantially uniform cross section extending between the top and bottom portions of said body to project outwardly of said body and operative during said rotation in said clipping position to clip grass located adjacent the periphery of said sprinkler head.

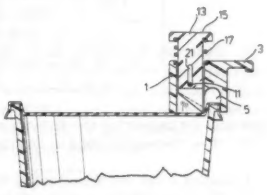


4,357,753

CUP LID PIERCING APPARATUS

William V. Wilkinson, 2215 Harcourt Crescent, Toronto, Ontario, Canada (L4Y 1W2)

Filed Aug. 10, 1981, Ser. No. 291,397
Int. Cl.³ B67B *7/24*
U.S. Cl. 30—443 **4 Claims**



1. A piercing and cutting apparatus adapted to penetrate flexible lids of coffee cups and the like, said apparatus comprising a locater portion for locating the apparatus in position at the lid and an operating member moveable with respect to said locater portion, said operating member comprising a rigid shaft having a lower end with a cutting member projecting downwardly therefrom, said cutting member comprising first and second spaced apart parallel cutting edges, said cutting edges being vertically offset from one another with said first cutting edge being lower than said second cutting edge, said cutting edges being positioned to extend radially of the lid to be penetrated and being vertically inclined such that said cutting edges slope downwardly from front to rear of the cutting member, the front of the cutting member being open between said cutting edges which are interconnected by an oblique blade at the rear of the cutting member, and said lower end of said shaft being solid at least at the front of said cutting member, said oblique blade meeting with said first cutting edge at a piercing tip on said cutting member, said piercing tip being adapted to initially pierce the lid after which said first cutting edge and said oblique blade cut into the lid at about 90 degrees to one another for distributing pressure in substantially perpendicular directions across the lid until said second cutting edge comes into contact with and cuts the lid parallel to and spaced from said first cutting edge to provide a generally rectangular flap in the lid, the lower end of said shaft being recessed above said cutting edges to thereafter drive against and fold the flap to a downwardly projecting position; each of said cutting edges being provided with a sharpened corner region at the open front of said cutting member and a vertical blade between the sharpened corner region and the solid lower end of said rigid

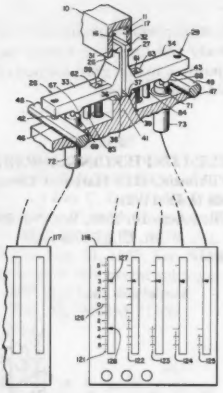
shaft, said sharpened corner region and vertical blade portion combining with one another on each of said cutting edges for cutting through the lid to either side of the flap where the flap is folded downwardly by the solid lower end of said shaft.

4,357,754

APPARATUS FOR ASCERTAINING INTERNAL DIMENSIONS OF A HOLLOW ARTICLE

William C. Kent, Garland, Tex., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 19, 1981, Ser. No. 245,404
Int. Cl.³ G01B *5/14, 7/14*
U.S. Cl. 33—148 H **5 Claims**



4. An apparatus for measuring the distance between a pair of opposed walls of an opening formed in an article, which comprises:

a pair of L-shaped lever members having fulcrum members projecting from the elbow sections of the levers;

a member having a pair of indentations for receiving said fulcrums to pivotally mount said lever members intermediate of the ends thereof;

means for supporting first ends of said levers to position the second ends of the levers in close proximity to each other;

means for holding the article spaced from said first ends of said lever members with the opening facing said first ends;

means for imparting a relative motion between said mounting means and said holding means to position said first ends within the opening in the article;

means for moving said supporting means and pivoting the lever members to engage the opposed walls of the opening; and

means responsive to the pivotal movement of each lever member for indicating the distance between said walls.

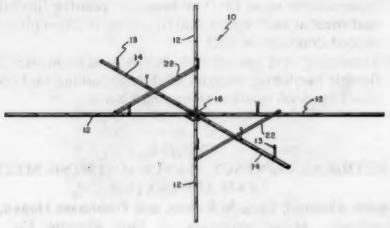
4,357,755

COLUMN PAD LAYOUT DEVICE, ANCHOR BOLT LAYOUT DEVICE, AND LAYOUT METHODS

William B. Allen, and Esther L. Allen, both of 932 W. 49th St. North, Wichita, Kans. 67204

Filed Jun. 23, 1980, Ser. No. 161,897
Int. Cl.³ G01B *5/00*
U.S. Cl. 33—180 R **8 Claims**

1. A fixture useful to identify and mark an excavation site of predetermined areal dimensions comprising a fixed pair of intersecting cross-arms generally representing an X-shape, each formed with a scale denoting units of linear measure; a third arm fixed to said intersecting pair of arms and subtending an angle of approximately 45° with each arm of said pair of arms and an opposed sides of said X-shape representation; and a central plate whereupon said cross-arms and said third arm are secured, said cross-arms representing an X-shape are hollow and are fitted with braces for maintaining their fixed relationship, said braces are fitted to said opposed sides wherein said third arm subtends an angle of approximately 45°, said cross-arms are fitted with extensions means which are formed with a nose means adapted to be received in telescoping fash-



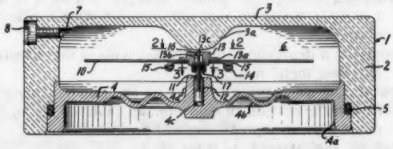
ion within said hollow arms to create an assembly, said extensions are fitted with spring clips terminating in and integrally bound to locating pin operative to fix the extension relative a mating arm, said nose means and its mating cross-arm each formed with apertures operative to receive said locating pin when in assembly.

4,357,756

MAGNETIC COMPASS

Albert M. DeGaeta, and Edythe C. DeGaeta, both of 10 Patriot Rd., Gladstone, N.J. 07934

Filed Nov. 10, 1980, Ser. No. 205,677
Int. Cl.³ G01C *17/06*
U.S. Cl. 33—355 R **14 Claims**



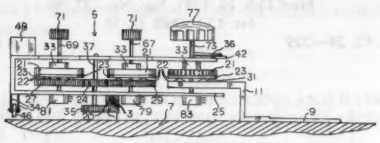
1. A magnetic compass comprising a case having a peripheral wall, a base and a transparent cover defining a card-receiving cavity, a fixed vertical shaft projecting up from said base centrally of said cavity and having an upper end below said cover, a compass card received in said cavity for rotation therein on said shaft, said compass card having a hub and magnetic means for orienting said card relative to terrestrial magnetic lines of force, and bearing means in said hub for rotatably supporting said card on said shaft, said bearing means comprising thrust bearing means engaging said upper end of said shaft to support said card vertically, and radial bearing means rotatably engaging said shaft below said upper end to position said card radially and to retain it approximately perpendicular to said shaft, said radial bearing means comprising an anti-friction bearing comprising an annular bearing race in said hub of said compass card formed of hard, strong, durable material and having a smooth circular cylindrical inner surface coaxially encircling and radially spaced from said shaft, a full circle of small precisely spherical balls of hard, strong, durable material between said bearing race and said shaft and flat annular end plates at opposite ends of said bearing race for retaining said balls in a circle, said balls being retained solely by said shaft, bearing race and end plates.

4,357,757

PERSPECTIVE DRAWING MACHINE

Frank R. Wurtz, 4570 Apricot Rd., Simi Valley, Calif. 93063

Filed May 20, 1980, Ser. No. 151,645
Int. Cl.³ B43I 13/14
U.S. Cl. 33—434 10 Claims



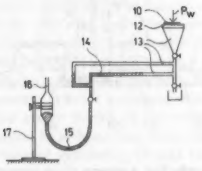
1. An electronic perspective drawing machine comprising:
a case having at least a top and a bottom;
means mounting said case above a drawing surface for linear movement between one chosen position to another chosen position;
drafting rule means pivotally mounted to said case;
a linear gear secured to a drawing surface and extending the length or width of the drawing surface;
a rotatable input shaft extending through bearings in the top and bottom of said case;
a follower gear connected solidly to said input shaft, said follower gear riding on and engaging said linear gear;
a drive gear also mounted on said input shaft between the top and bottom of said case;
right and left vanishing point input gears mounted in said case meshing with said drive gear;
means connected to both said right and left input gears to produce a voltage potential proportional to the change of position of said case;
means connected to said drafting rule means to produce a voltage potential proportional to a pivotal movement of said drafting rule from zero reference potential at the eye level position;
said case including means for lifting the drafting rule off the drawing surface;
means to lock said case against lateral movement; and
means to selectively measure said voltage potentials.

4,357,758

METHOD AND APPARATUS FOR DRYING OBJECTS

Markku Lampinen, Turku, Finland, assignor to Valmet Oy, Finland

Filed Dec. 2, 1980, Ser. No. 212,263
Claims priority, application Finland, Jul. 1, 1980, 802106
Int. Cl.³ F26B 3/00
U.S. Cl. 34—9 29 Claims



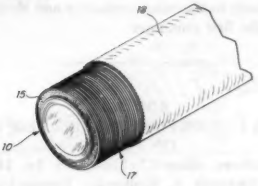
1. A method for drying an object constituted by a porous web-like material, such as a paper web, a granular material, such as peat, or a solid material, such as wood, comprising the steps of:
adapting the object to be dried so that the same has a liquid-saturated fine porous suction surface in contiguity therewith;
placing the suction surface in liquid communication with a liquid volume; and
maintaining the liquid volume at an underpressure relative to the pressure of the liquid in the object to be dried;
whereupon liquid flows from the object to be dried into the suction surface.

4,357,759

METHOD OF REMOVING WATER FROM WATER BASE CAN SEALANT

Robert S. Holdsworth, Arlington, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 3, 1981, Ser. No. 231,185
Int. Cl.³ F26B 5/16
U.S. Cl. 34—9 22 Claims



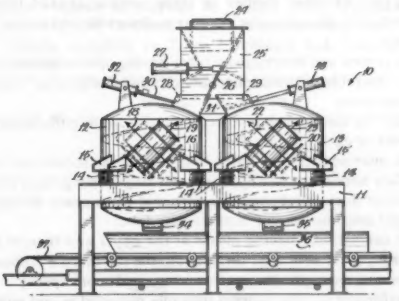
1. In the process for lining can ends with a water base can end lining compound wherein the can ends are
(1) introduced to a lining machine
(2) lined
(3) removed from the lining machine
(4) arranged in stacks
(5) allowed to dry
the improvement which comprises enclosing the arranged stacked can ends in water absorbent material that does not come in contact with the water base can end lining compound on can ends interior of a stack, prior to any other substantive drying step whereby the need for an external source of heat for the purpose of drying is eliminated.

4,357,760

APPARATUS FOR DRYING PULVERULENT MATERIAL

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed Feb. 2, 1981, Ser. No. 230,854
The portion of the term of this patent subsequent to Feb. 24, 1998, has been disclaimed.
Int. Cl.³ F26B 25/04
U.S. Cl. 34—56 5 Claims



1. Apparatus for drying wet pulverulent material comprising a source of the material, a pair of containers, a base, a plurality of isolation springs supporting the containers on said base, each container having means for imparting spiral vertical vibratory movement thereto including a pair of electric motors one on

each side of each container, each motor having a shaft carrying a pair of eccentric weights with the axes of said shafts being oppositely inclined to the veritcal, means selectively operable to direct the flow of material from the source to one or the other of said containers, an outlet from each container, valve means controlling said outlets, a source of vacuum, means selectively operable to connect the source of vacuum to one or the other of said containers, a control mechanism for controlling said flow directing means and said valve means, said control means being arranged sequentially to direct flow of material into one container then connecting said one container to the source of vacuum while directing flow of material into the other container, then operating the valve means to discharge material from said first container and then connecting the source of vacuum to the other container and directing flow of material into the first container.

4,357,761

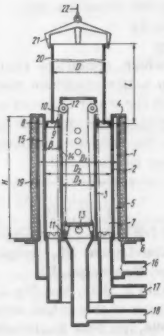
APPARATUS FOR DRYING ENAMEL SLIP COATINGS ON PIPES

Anatoly E. Makeev, ulitsa Chekhova, 79, kv. 14, Rostov-na-Donu, and Alexandr A. Sirotinsky, Fergansky proezd, 13, korpus 1, kv. 15, Moscow, both of U.S.S.R.

Filed Jan. 8, 1981, Ser. No. 223,311

Int. Cl.³ F26B *15/20*

U.S. Cl. 34—105 **6 Claims**



1. Apparatus for drying enamel slip coatings on pipes, comprising;

a drying chamber formed of three vertical coaxial tubes including an outer tube, an intermediate tube and a central tube;

said central and intermediate tubes having apertures therein;

said central and intermediate tubes forming an annular working space;

means for the independent feed of drying air into the bottom part of each of said tubes;

said intermediate and outer tubes being interconnected at their uppermost end by an annular ring forming therewith an air duct communicating with said work space through said apertures in said intermediate tube;

said central tube having means at the upper end thereof to prevent exhaust of air directly out the top thereof without passing through said apertures into said work space;

a perforated annular support movably mounted in said work space and adapted to support a pipe to be treated, said pipe surround said central tube so as to dry the inner and outer walls of said pipe; and

a counter weight movably mounted inside said center tube and kinematically connected with said support for moving said pipe in said working space over said movable support.

4,357,762

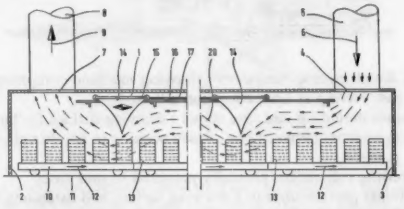
APPARATUS FOR CONTROLLING THE VENTILATION EFFECT ON MATERIAL DRIED IN A TUNNEL DRYING PLANT

Claudio Eustacchio, Graz, Austria, assignor to Fuchs & Co. Aktiengesellschaft fur Elektrodraht-Erzeugung und Maschinenbau, Austria

Filed Feb. 24, 1981, Ser. No. 237,786

Int. Cl.³ F26B *15/16*

U.S. Cl. 34—229 **8 Claims**



1. A tunnel drying plant comprising:

means defining a tunnel for passage of goods therethrough from an inlet end to an outlet end;

an air inlet blower at said tunnel outlet end for forcing dry hot air into said tunnel;

an air aspiration unit at said tunnel inlet end for removal of moist air from said tunnel;

at least one air guide body within said tunnel for passage of goods therebeneath for guiding and forcing air between goods to be dried; and

at least one car adapted for movement within said tunnel for supporting said at least one air guide body.

4,357,763

SOLE ASSEMBLY FOR A SPORTS SHOE

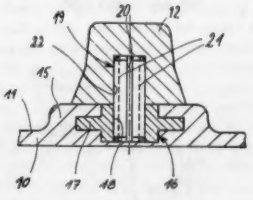
Josef Fleischmann, Geislingen-Binsdorf, and Franz Epple, Haigerloch-Stetten, both of Fed. Rep. of Germany, assignors to Sportartikelfabrik Karl Uhl GmbH, Balingen, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,481

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003631

Int. Cl.³ A43C *15/00*

U.S. Cl. 36—67 D **7 Claims**



1. A sole assembly for a sports shoe comprising:

a sole member provided with a plurality of generally cylindrical recesses extending from the ground-contacting surface of the sole member at least part way through its thickness;

at least one gripping element having a cylindrical recess extending at least part way therewithin;

respective generally cylindrical shells longitudinally slit throughout their entire lengths and press fit into said gripping element recesses;

said shells extending from the gripping elements into respective cylindrical recesses in said sole member;

the diameter of said sole member cylindrical recesses being slightly less than the original diameter of the cylindrical shells whereby the shell outer surfaces are pressed into frictional engagement against the sole member recess inner surfaces;

the diameter of the gripping element cylindrical recesses being less than the diameter of the sole member cylindrical recesses.

4,357,764

SUBMARINE VEHICLE FOR DREDGING AND RAISING MINERALS RESTING ON THE SEA BED AT GREAT DEPTHS

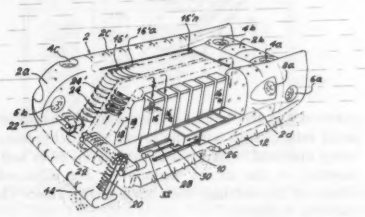
Pierre Lemercier, Saint Martin le Vinoux; Paul Marchal, Gif-sur-Yvette, both of France; Jean-Pierre Moreau, De Panne, Belgium; Jean Vertut, Issy les Moulineaux, and Henri Ligozat, Saint Egreve, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 21, 1980, Ser. No. 142,046

Claims priority, application France, Apr. 27, 1979, 79 10776

Int. Cl.³ E21C *45/00*; E02F *9/00*

U.S. Cl. 37—54 **8 Claims**



1. A submarine vehicle for collecting and raising materials resting on the sea bed at great depths, of the type comprising a load-bearing structure (**2**), collecting elements (**14**) for the materials, storage silos (**16**) for storing the materials collected and ballast material, transfer means (**20**, **22**, **24**) between said collecting elements and said silos, and main propellers (**12**) for advancing the vehicle on the sea bed, wherein said load-bearing structure (**2**) is made of a buoyancy material, said structure being in the form of a ring having a longitudinal plane of symmetry and defining the stem (*2a*) stern (*2b*) and sides (*2c*, *2d*) of said vehicle, thus defining between them a free central space, the outer surface of said structure forming the hull of said vehicle, said storage silos (**16**) being arranged in the free central space and fixed to said load-bearing structure, said collecting elements (**14**) being arranged in front of and below said stem (*2a*), said main propellers (**12**) also being fixed to the lower surface of said load-bearing structure, wherein the load-bearing structure (**2**) is formed by the side-by-side arrangement of modular elements (**40**) made of a buoyancy material, said modular elements being made integral with one another by tie rods (**44**, **46**) while the outer lateral surface of each modular element defines the corresponding portion of the hull wherein said collecting elements (**14**) are arranged side-by-side and take up substantially the entire width of the vehicle, said storage silos (**16**) are arranged in at least two lines (**16**, **16'**) parallel to the longitudinal plane of symmetry of said vehicle and placed symmetrically relative to this plane and having upper openings, each line taking up substantially the entire length of said free central space, and wherein said transfer means consist of a first set of conveyors (**20**) moving in the longitudinal direction of the vehicle, each conveyor of the first set being associated with a collecting element (**14**), a second set of conveyors consisting of at least two conveyors (**22**) symmetrical relative to said longitudinal plane and adapted to move towards said longitudinal plane the material transferred by the conveyors of the first set (**20**), and a third set of conveyors consisting of at least two conveyors (**24**) arranged symmetrically with respect to the longitudinal plane and passing above the upper opening of the silos in said lines (**16**, **16'**) and enabling said material to be emptied into said silos by gravity.

4,357,765

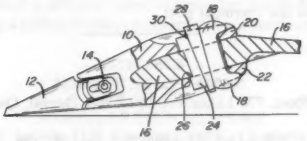
APPARATUS FOR SECURING OVERLAPPING PORTIONS OF TWO DIGGER TOOTH MEMBERS TOGETHER

James E. Seykora, Hibbing, Minn., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 133,166, Mar. 24, 1980, abandoned. This application Jul. 8, 1981, Ser. No. 281,442

Int. Cl.³ E02F *9/28*

U.S. Cl. 37—142 R **3 Claims**



1. Apparatus for securing a tooth adaptor to the lip of an excavator, said adaptor having arms for fitting over respective top and bottom surfaces of the lip of said excavator, each of said arms and lip having a hole therethrough, said holes being generally mateably aligned, said apparatus comprising:

a C-clamp member for mounting in said holes, the parallel legs of the C adapted to tightly engage outer surfaces of the respective arms of said adaptor so as to clamp said arms against the excavator lip,

a locking bar adapted for insertion in said holes and having a notch in one longitudinal side thereof for abutting a sidewall of the excavator lip, opposed end faces of said notch being adapted to tightly engage the outer surface of the lip of said excavator, the holes in said lip and arms being offset slightly so as to permit said engagement thereof by said notch,

an incompressible metal wedge for insertion centrally between said C-clamp member and locking bar for securing said adaptor to the excavator lip,

whereby, loosening of the wedge by flexure of the arms of said adaptor in service is prevented.

4,357,766

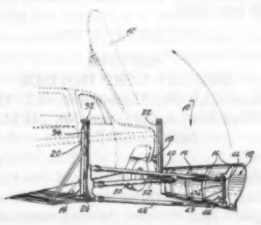
SNOW PLOW SIDE WING ASSEMBLY

Lucien Croteau, St-Valerien de Milton; Alain Marchand, St-Valerien, and Bertrand Houle, Drummondville Sud, all of Canada, assignors to Tenco Machinery Ltd., Ste-Valerien, Canada

Filed Feb. 26, 1981, Ser. No. 238,367

Int. Cl.³ E01H *5/06*

U.S. Cl. 37—281 **7 Claims**



1. A snow plow side wing assembly comprising front and

rear upstanding posts adapted to be mounted on the frame of a vehicle on the side thereof and carrying a snow plow side wing, at least the rear post including track means and a traveling carriage mounted on the track means for vertical sliding movement thereon, a hydraulic piston and cylinder means mounted on the opposite side of the post to the track means with the cylinder of the cylinder means mounted to the base of the post and the piston of the cylinder means extending upwardly from the cylinder of the cylinder means parallel to the post and connected to an extension arm extending parallel thereto but on the track side of the post and connected to the carriage, the piston and cylinder means being extendable to move the extension arm and carriage upwardly in the track means, a forwardmost carriage mounted on said front upstanding post, and means connecting the front of the snow plow wing to said carriage on the forwardmost post, and means connecting the rear part of the snow plow side wing to the carriage of the rearmost post.

4,357,767

NAME PLATE SYSTEM

Klaus D. Ross, 770 Lakeshore Dr. #706, Dorval, Quebec, Canada

Filed Oct. 27, 1980, Ser. No. 201,194
Claims priority, application Canada, Dec. 28, 1979, 342804
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—1.5 **9 Claims**

1. A name plate comprising:

a base plate having a flat surface and displaying on said surface at least one pair of guide rails and a pair of lugs disposed adjacent each opposite extremity of said surface;

cover plate means in spaced covering engagement with said base plate; said cover plate having, on one face thereof, two longitudinal extending parallel flanges adapted to slidably and graspingly engage said guide rails of said base plate;

a pair of locking bars mounted at said opposite extremities of said base plate and each having a portion adapted to be inserted between said cover and said base plate to close said extremities; said portion including notch means adapted to engage said lugs at said extremities; and

resilient retainer means mounted at opposite ends of said base plate; said resilient retainer means consisting of a member secured to said base plate between said guide rails, said member including a flexible arm extending longitudinally toward said locking bar and contacting said portion of said locking bar when said lug is engagedly received in said notch means; said arm applying pressure on said portion of said locking bar to maintain said notch means in engagement with said lugs, said pressure capable of being overcome to manually disengage said locking bar from said base plate.

4,357,768

DISPLAY CARD HOLDER

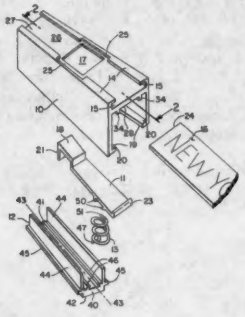
Brett De Dube, 6 Club Dr., Massapequa, N.Y. 11758

Filed Mar. 6, 1981, Ser. No. 241,115
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—17 **7 Claims**

1. A lockable display card holder, of the type adapted to receive an inserted card, comprising, in combination,

a. an elongated base member, having upper channel means for slideably accepting a display card, a hole for accepting a latch head, the head adapted to retain the display card from lateral displacement, and lower channel means for slideably accepting a latch assembly,

b. a latch assembly, comprising a concealed carriage member operatively associated in sliding relationship with the lower channel means, and defining a recess for accepting a latch lever arm, the arm having a head at one end in cooperative association with the base member hole, the head adapted to extend through the hole as a stop against the display card, and defining a lip depending therefrom and proportioned for interferring contact with the carriage member when in operative position, and for clearance therefrom when in transverse sliding non-operative



position, the arm having a further lip at its opposite end in pivot relationship with the lower channel means, the arm being disposed between the carriage member and the base member in the cavity formed by the adjacent mating recess of the carriage member and the lower channel of the base member,

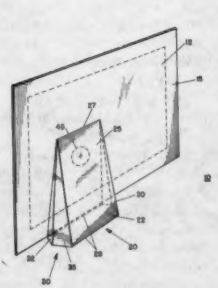
c. resilient means located in the cavity, between the latch lever arm and the carriage member, such that the head is urged to extend through the hole to an operative position in locking relationship to the base member, the resilient means being affixed to both the latch lever arm and the carriage member.

4,357,769

PICTURE FRAME WITH ROTATABLE EASEL

David J. Leahy, Framingham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Mar. 12, 1981, Ser. No. 243,172
Int. Cl.³ G09F *1/00;* A47G *1/06;* A47B *97/04*
U.S. Cl. 40—152.1 **16 Claims**



1. A display device for snapshots and the like which comprises:

a mounting member and stand attached to said mounting member, said stand comprising

a first panel and a second panel intersecting to form a common edge, and

a collapsible side panel interconnecting the first and second panels, and

means for rotatably mounting the stand to a surface of said mounting member, wherein said means is located on the surface of said mounting member at a point about perpendicularly equidistant from two substantially adjacent edges of the mounting member, the stand rotatable to a position perpendicular to either of said edges, said stand securely holding the mounting member in alternative upright display positions on a flat surface with either of said edges in contact with the flat surface.

4,357,770

CONTROL PANEL FOR A MICROFICHE READER

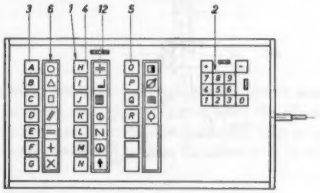
Hermann Poehler, Ober-Mörlen, Fed. Rep. of Germany, assignor to MAP Mikrofilm Apparatebau Dr. Poehler GmbH & Co. KG, Ober-Möerlen, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,678

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950167

Int. Cl.³ G02B *27/02*

U.S. Cl. 40—361 **11 Claims**



1. In a microfiche reader for reading micro-fiches carrying a plurality of images arrayed along two mutually normal coordinate axes, the microfiche being movable in the reader along said coordinate axes for locating individual desired images to be viewed in a known per se manner, the combination comprising a first keyboard having a plurality of buttons with respective index images; at least one turnable index carrier carrying a plurality of indica each corresponding to a row of images extending along one of said coordinate axes, said index carrier being adapted to be switched to a plurality of positions to thus position the respective indicia thereon adjacent respective associated buttons of said first keyboard to indicate the row of images in which the individual desired image is located; and a second keyboard having a plurality of buttons with index images operative for retrieving the individual desired image in the row of images indicated by said first keyboard.

4,357,771

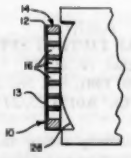
OPTICAL FILTER DEVICE

Howard F. Olds, Denver, Colo., assignor to Mobius Communication, Inc., New York, N.Y.

Filed Apr. 30, 1980, Ser. No. 145,252

Int. Cl.³ H04N *5/72*; **H01J** *61/40*; **G09F** *13/00*

U.S. Cl. 40—444 **23 Claims**



1. An optical filter disposable so as to intercept a defined color image from a source and transform said defined color image into a color abstract, said defined color image emitting a plurality of light rays associated therewith, said filter comprising a light-collector means having a plurality of light-collector channels extending therethrough, a light translucent display screen having a front surface and a rear surface said display screen being composed of a translucent light diffusing material; said light-collector channels each having an input end and an output end; said display screen rear surface being disposed in confronting relation with said light-collector channels output ends, said light-collector channels input ends being disposable to intercept at least a portion of said light rays emitted from said color image, each of said light-collector channels diffusing and averaging said portion of intercepted light rays being passed therethrough from said input end to said output end for impinging said diffused and averaged portion of said intercepted light rays upon said rear surface of said display screen, said display screen further diffusing said impinging light rays for providing a diffused color abstract on said front surface comprising a diffused color composite of said intercepted color image.

4,357,772

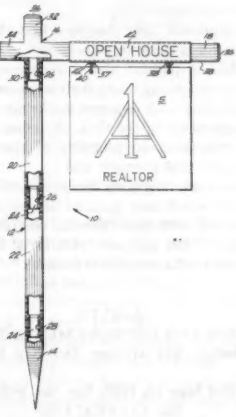
MODULAR SIGN SUPPORT

Edward W. Amick, 1151 Harborview Rd., Charlotte Harbour, Fla. 33950, and Paul W. Pelley, 212 Great Neck St., Port Charlotte, Fla. 33952

Filed May 12, 1980, Ser. No. 149,174

Int. Cl.³ G09F *7/00, 15/00*

U.S. Cl. 40—605 **1 Claim**



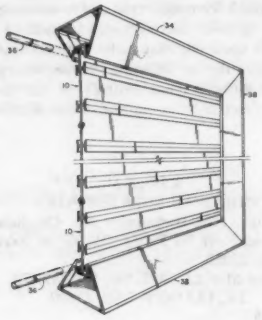
1. A sign support comprising an upright post including a plurality of modules formed of a suitable plastic material and including socket and tenon means to permit a plug-in connection therebetween, the tenon being of reduced dimension to plug into the socket and being contoured to provide a smooth exterior surface between adjacently positioned modules, said plurality of modules including a bottom end spike module including a downwardly projecting pointed end, a top cross arm module including at least one elongated laterally extending arm, and at least one vertically disposed intermediate module of a predetermined length for said plug in connection between said spike and cross arm modules; said elongated laterally extending arm including a first pair of appropriately spaced apart perforated tabs in a downwardly extending relation to and formed integrally with a bottom wall portion thereof tor receive appropriate attachment means to connect a primary sign thereto in a downwardly suspended position, and a generally tubular secondary sign means, cross sectionally sized and configurated for slide-on reception on said elongated

arm, and including a longitudinal slot through a bottom wall thereof to provide a clearance for said tabs.

4,357,773
DISPLAY SIGN

Ashley A. Dennis, St. Lambert, Canada, assignor to RLD Industries Ltd., Ottawa, Canada

Filed Sep. 23, 1980, Ser. No. 189,764
Claims priority, application Canada, Apr. 24, 1980, 350642
Int. Cl.³ G09F *7/02*
U.S. Cl. 40—618 **6 Claims**



1. A display sign comprising:

(a) a rigid peripheral frame having a first channel extending around the inner periphery thereof;

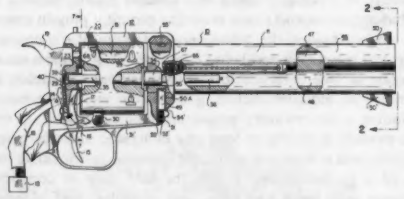
(b) a plurality of parallel slats interconnected by curved hook means extending along their adjacent marginal edges and interlocking with adjacent hooks means to effectively prevent separation of the slats, the outer peripheral edge of said interconnected plurality of slats being slidably insertable into said channel; and

(c) hook means interengaging the peripheral marginal edges of said interlocked slats, parallel the interlocked marginal edges thereof, with said channel, whereby lateral forces on the face of the sign are transferred from one slat to another and to the peripheral frame.

4,357,774
FIREARM AND IMPROVEMENTS THEREIN

William A. Badger, 944 Military Dr., Salt Lake City, Utah 84108

Filed May 12, 1980, Ser. No. 149,044
Int. Cl.³ F41C *1/00*
U.S. Cl. 42—59 **10 Claims**

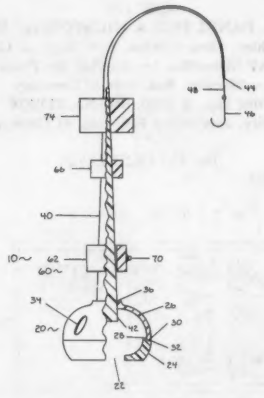


1. In a firearm provided with a revolvable cylinder, a cylinder-mounting block and a plural-bore releasably detachable barrel member of longitudinally elongated dimension: an improvement wherein said cylinder includes cartridge bores of plural sizes and is end-for-end reversible, and said block is provided with means for longitudinally releasably receiving said barrel member in both, alternately, of two positions axially rotationally 180° apart, and means for releasably locking said barrel member to said block in a selected position.

4,357,775
FISH BAIT POSITIONER

Loring H. Click, 2319 Kimbrough Woods Pl., Germantown, Tenn. 38138

Filed Nov. 4, 1980, Ser. No. 203,864
Int. Cl.³ A01K *95/00*
U.S. Cl. 43—43.1 **9 Claims**



1. A fishbait positioner comprising a weighted base and a flexible reed slideably mounted therein, wherein:

a. said weighted base is hollow and comprises a bottom portion secured to a top portion;

b. said bottom portion comprises **51** to **95** percent by weight of said fishbait positioner, so that said weighted base touches a bottom of a fishing habitat when said fishbait positioner is in use;

c. said bottom portion is hollow;

d. said top portion of said weighted base has therein a mounting aperture for mounting said flexible reed;

e. said flexible reed has a topend and a baitend;

f. said topend is slideably mounted in said weighted base at said aperture;

g. said top portion further includes at least one slot to permit water to pass therethrough, when said fishbait positioner is in use, and permit reduced turbulence in the sinking and retrieving of said fishbait positioner;

h. a fishline attachment is slideably mounted on said flexible reed between said topend and a stop, said stop being secured to said flexible reed between said fishline attachment and said baitend;

i. said flexible reed is tapered and has a cross-sectional diameter at said topend 6 to 12 times that of said baitend; and

j. said topend and said aperture mate in a male-female relationship.

4,357,776
ANIMAL TRAP LIFTING APPARATUS

David Knaak, R.R., Beecher, Ill. 60401

Filed Jan. 30, 1981, Ser. No. 230,410
Int. Cl.³ A01M *23/24*
U.S. Cl. 43—96 **10 Claims**

1. Apparatus for selectively lifting an animal trap to an above-the-ground disposition as an incident of an animal being caught in the trap, and apparatus comprising:

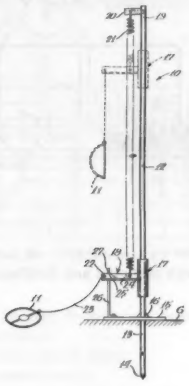
means defining a vertical slide;

means for disposing the slide to extend in an upright manner from the ground;

a lift element slidably carried on said slide;

means for connecting an animal trap to said lift element; and

means responsive to an animal being trapped by said trap to rapidly slide said lift element from a preselected lower position on said slide to an upper position, said connecting



means being arranged to permit the trap to be disposed on the ground for trapping an animal when the lift element is in said lower position and to dispose the trap in an above-the-ground position when the lift element is in said upper position.

4,357,777

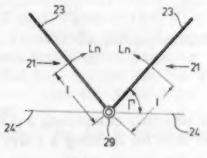
DIHEDRAL AERODYNAMIC STRUCTURE

Donald A. Kulik, 133 Richmond St. West, Toronto, Ontario, Canada (M5H 2L7)

Filed Jan. 3, 1978, Ser. No. 866,480

Int. Cl.³ A63H *27/00*

U.S. Cl. 46—80 **4 Claims**



1. An aerodynamic structure having self-correcting flight properties; said aerodynamic structure comprising first and second corresponding planar sections connected at their roots to one another centrally of the aerodynamic structure by a springy hinging connection and moveable relative to one another through corresponding dihedral angles; each of said sections comprising: a forward wing, a body portion, and a rear empennage moveable in unison with one another and said sections being moveable from a widespread glide position to an essentially folded projectile position in response to dynamic pressures to substantially alter the equilibrium state and stability of the structure during flight.

4,357,778

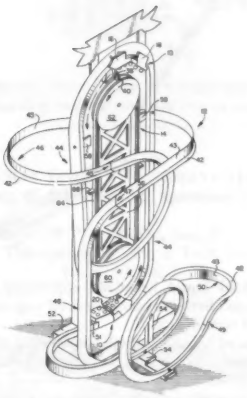
TOY VEHICLE AND TRACKWAY

Hajime Matsumoto, Chiba, and Toshihisa Suga, Saitama, both of Japan, assignors to Toybox Corporation, Tokyo, Japan

Filed Aug. 21, 1981, Ser. No. 295,109

Int. Cl.³ A63H *11/10*

U.S. Cl. 46—202 **13 Claims**



1. An amusement device, comprising:

a support;

first and second pulleys rotatably mounted on said support at spaced apart positions and lying substantially in a first plane, the axes of the pulleys lying substantially in a second plane which is perpendicular to the first plane, the first pulley being positioned above the second pulley;

a belt stretched between said first and second pulleys to provide a first substantially straight belt segment and a second substantially straight belt segment;

means mounted on said support for moving said belt;

a continuous trackway mounted on said support, said trackway having a first substantially straight portion spaced apart from the first belt segment, said first straight portion lying substantially in a plane which is parallel to said first plane and also lying substantially in a plane which is parallel to said second plane, having a second substantially straight portion spaced apart from the second belt segment, said second straight portion lying substantially in a plane which intersects said first plane at an acute angle and also lying substantially in a plane parallel to said second plane, having a third portion connecting the upper ends of the first and second portions and arching over said first pulley, and having a fourth portion connecting the lower ends of said first and second portions;

a vehicle provided with means for attaching said vehicle to said trackway for coasting movement therealong; and

at least one flange projecting from said belt to engage said vehicle when said vehicle is positioned on the first portion of said trackway, said vehicle being lifted by said at least one flange when said vehicle is positioned on said first portion of said trackway and being released for coasting movement after said vehicle arches over said first pulley.

4,357,779

HAND HELD LIQUID HERBICIDE APPLICATOR

Mitchell E. Maddock, Rte. 1, Box 24AA, Florence, Ariz. 85232

Continuation-in-part of Ser. No. 72,147, Sep. 4, 1979, Pat. No. 4,305,224, and a continuation-in-part of Ser. No. 94,715, Nov. 16, 1979, Pat. No. 4,291,491. This application Mar. 5, 1981, Ser. No. 240,779

Int. Cl.[3] **A01M** *21/00;* **A01N** *5/00*

U.S. Cl. 47—1.5 **14 Claims**

1. A hand-held liquid herbicide applicator for wipingly applying the liquid herbicide on undesired vegetation growing at ground level comprising:

(a) an elongated tubular handle for holding at a forwardly and downwardly extending angle which defines an application position;

(b) a liquid herbicide container means demountably mounted on the upper end of said tubular handle for supplying the liquid herbicide to the bore thereof;

(c) vent valve means in said container means for admitting air thereto when the liquid herbicide flows therefrom into the bore of said tubular handle;

(d) flow control valve means mounted in said tubular handle for controlling the flow of the liquid herbicide through the bore thereof; and

(e) an elongated applicator head fixedly mounted on the lower end of said tubular handle and extending angularly therefrom in substantially horizontally plane when said tubular handle is held in its application position, said applicator head including,

I. an elongated tubular dispenser conduit extending angularly from said tubular handle for receiving the liquid herbicide therefrom, said tubular dispenser conduit having its extending end closed and having a plurality of dispensing apertures formed incrementally along its bottom,

II. a synthetic sponge affixed to said tubular dispenser conduit for internally absorbingly receiving the liquid herbicide dispensed thereby, said sponge having a porous relatively dense peripheral skin for retarding initial surface wetting to insure prior even internal saturation thereof.

4,357,780

FIBROUS WEB FOR PLANTING SEEDS, METHOD OF USING SAME, APPARATUS FOR PRODUCING SAME

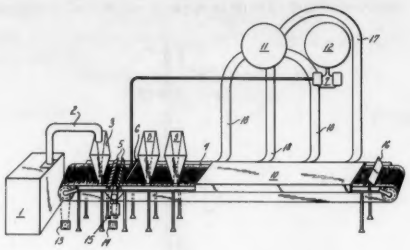
Harry J. Ball, 453 N. Clark St., Pleasantville, Iowa 50225

Continuation-in-part of Ser. No. 971,603, Dec. 20, 1978, abandoned. This application Jul. 17, 1980, Ser. No. 169,856

Int. Cl.[3] **A01C** *1/04*

U.S. Cl. 47—56 **7 Claims**

3. A seeded and fertilized mulch mat having a thickness and density which derives its entire structural strength and unity from randomly oriented, unmodified, natural, elongated, straws bonded together through spot contact bonding between contiguous fibers by water soluble adhesive without the application of compression and including on one side of said mat only, seed and fertilizer distributed uniformly thereover, and



secured to said straws by said adhesive on said straws making spot contact only with said seed and fertilizer.

4,357,781

REAR SIDE DOOR STRUCTURE FOR FOUR-DOOR TYPE AUTOMOBILES

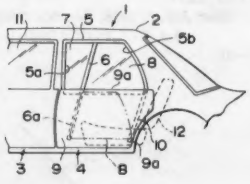
Takeji Ohya, and Tatuo Maeda, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jul. 14, 1980, Ser. No. 168,787

Claims priority, application Japan, Jul. 14, 1979, 54/96906[U]; Jul. 16, 1979, 54/98689[U]; Aug. 31, 1979, 54/121176[U]

Int. Cl.[3] **E05F** *11/52*

U.S. Cl. 49—227 **7 Claims**



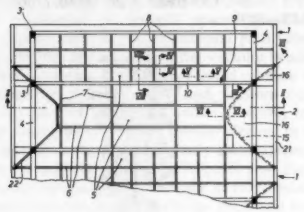
1. Rear side door structure comprising a door panel assembly having an upper hem for defining a lower edge of a window opening and a tire house relief cutout formed at rear corner portion, guide means extending upwardly from said upper hem of the door panel assembly to divide the window opening into a front and rear opening portions, a front transparent glass panel secured to the door panel assembly to cover said front opening portion, a rear transparent glass panel disposed movably along said guide means between a closed position wherein it covers the rear opening portion and an open position wherein it is retracted into said door panel assembly, said guide means being inclined rearwardly so that the rear transparent glass panel is moved forwardly as it is moved downwardly to the open position along the guide means whereby the glass panel is retracted into said door panel assembly forwardly of said tire house relief cutout.

4,357,782

DOMED SUPPORT FRAMEWORK OR TRUSS

Emil Peter, Dammweg, Marthalen, Switzerland

Filed Jun. 18, 1980, Ser. No. 160,608
Claims priority, application Switzerland, Jun. 22, 1979, 5882/79
Int. Cl.³ E04B 7/12
U.S. Cl. 52—18 16 Claims



1. A domed support framework, especially for roof constructions, comprising:

at least one compression dome;

at least one tension dome;

said compression and tension domes being arched oppositely with respect to one another in one direction and adjacently arranged in the arching direction;

common support means for supporting the ends of said domes;

roof form elements and reinforcement ribs provided for said compression and tension domes;

said roof form elements and reinforcement ribs being oriented in the arching direction and in such direction being loaded both in tension and compression;

at least one tension element at each end of the tension dome extending substantially transversely to the arching direction and transversely spanning said at least one tension dome with which there are connected the roof form elements and reinforcement ribs;

and

said at least one tension element extending between said common support means in the surface of the tension dome, being guided over said common support means to the compression dome and being anchored at an extension of said compression dome.

4,357,783

CONCRETE REINFORCED WALL MODULES FOR USE IN BUILDING CONSTRUCTION

Calvin Shubow, Farmington, Mich., assignor to Universal Component Systems, Inc., Detroit, Mich.

Filed Aug. 4, 1980, Ser. No. 174,992
Int. Cl.³ E04B 2/56
U.S. Cl. 52—439 5 Claims

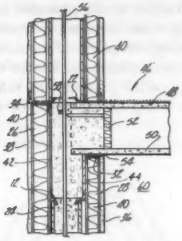
1. A wall module for use in building concrete structures, comprising:

a plurality of rigid elongate tubes adapted to receive concrete therein and disposed in spaced, parallel relationship to each other;

a first elongate frame member extending transverse to the longitudinal axes of said tubes and connected to one end of each of said tubes;

a second elongate frame member extending transverse to the longitudinal axes of said tubes and connected to the other end of each of said tubes; and

a plurality of vertical support members disposed in spaced, parallel relationship to each other and at spaced intervals along the length of said first and second frame members so as to bear distributed loading between the opposite ends of said module, each of said vertical support members being connected to said first and second frame members and



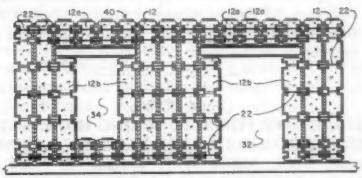
being laterally spaced from said tubes and including portions extending beyond said one end of said tubes.

4,357,784

STRUCTURAL UNITS AND ARRAYS THEREFROM

Clyde C. Grady, II, 889 Azalea St., Apartment 11, Baton Rouge, La. 70802

Continuation of Ser. No. 828,312, Aug. 29, 1977, Pat. No. 4,324,037. This application May 3, 1979, Ser. No. 35,597
Int. Cl.³ E04C 1/10
U.S. Cl. 52—585 9 Claims



1. A composite unit, for building structural arrays, comprising more than one individual module wherein each individual module is composed of:

a. an inner structural core of a first material;

b. a plurality of load-distributing elements attached to portions of the surface of said core, each of said elements being of a second material different from said first material and being substantially hard to resist fracture, there being provided a plurality of holes through said inner core and said attached elements, said elements providing a mating face for contacting the face of an adjacent attached module, wherein the mating face of the said adjacent attached module is also provided with at least one of said elements;

c. elongated tension means for holding at least two of the modules tightly together in face-to-face relationship forming a composite unit when said holes through said inner core and said attached elements are substantially aligned defining a bore through which said tension means is connectable.

4,357,785

TELESCOPIC MAST

Erik Eklund, Klövervägen 15, 161 36 Bromma, Sweden

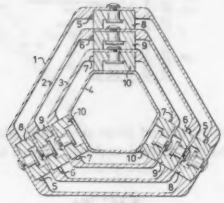
Filed Jan. 29, 1980, Ser. No. 116,479
Claims priority, application Sweden, Feb. 9, 1979, 7901163
Int. Cl.³ E04G 25/00
U.S. Cl. 52—632 2 Claims

1. A telescopic mast comprising:

a plurality of extruded pipes nested and spaced from one another and movable relative to one another, each pipe having a closed cross section and having planar side walls, the pipes being arranged with their planar side walls sub-

stantially parallel one another, and each pipe having at least three guide grooves in the interior of its side walls extending along the entire length of the pipe; and

guide means attached to the pipes for maintaining the spacing of the pipes one from another and serving as bearing members during movement of the members relative to one another, the guide means further for maintaining the rotational stability of the pipes during relative movement, the guide means being in the form of a plurality of guide



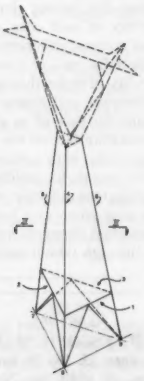
blocks provided at the upper and lower ends of the pipes, the guide blocks located at the upper ends of the pipes being fixedly mounted within the grooves and projection therefrom into sliding engagement against the exterior of the planar side walls of the pipes located inside thereof, and the guide blocks located at the lower ends of the pipes being attached on the exteriors of the planar side walls of the pipes for limited movement and projecting therefrom into slidable engagement in the grooves of the pipes located outside thereof.

4,357,786

STEEL TOWER FOR SUPPORTING HIGH- AND VERY HIGH-TENSION LINES IN ELECTRIC NETWORKS

Massimo Finzi, Milan, Italy, assignor to S.A.E. Societa Anonima Elettrificazione S.p.A., Milan, Italy

Filed Jun. 2, 1980, Ser. No. 155,346
Claims priority, application Italy, Jun. 6, 1979, 23317 A/79
Int. Cl.³ E04H *12/10*
U.S. Cl. 52—649 **5 Claims**



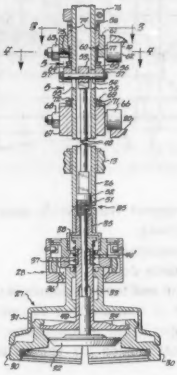
1. A Steel tower for supporting high- and very high-tension lines in electric networks, which comprises an upwardly tapered truss structure with a triangular cross-section, wherein such a cross-section has the shape of an isosceles right triangle, the tower side corresponding to the hypotenuse being directed vertically, whereby the upward tapering is provided by a slope of the other two sides corresponding to the two cathetuses which are equal to each other and at an angle of 45° with respect to the said hypotenuse.

4,357,787

SPINDLE FOR CAPPING MACHINE

Charles N. Long, Buffalo, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Filed May 30, 1980, Ser. No. 154,531
Int. Cl.³ B65B *7/28*; B67B *1/06*
U.S. Cl. 53—317 **7 Claims**



1. In a container capping apparatus of the type having a generally vertical tubular spindle rotatable about its axis and carrying a cap holding chuck assembly at its lower end, drive means for rotating said spindle to apply a screw cap to a container, a control rod vertically movable within said spindle for releasing a cap from said assembly, spring means normally urging said control rod in one direction within said spindle, cam controlled means for moving said rod in the opposite direction to release a cap from said assembly, said cam controlled means including a cam follower carried by a yoke vertically movable relative to said spindle, and adjustable means limiting movement of said control rod in said one direction relative to said cam follower, the improvement comprising:

(a) an axle carried by said control rod and projecting through vertically elongated slots in opposite sides of said spindle;

(b) means to transmit thrust from said yoke to said axle in a direction parallel to the axis of said spindle; and

(c) an adjusting nut external relative to and coaxial with said spindle and carried by said yoke for movement therewith relative to said spindle, said nut limiting movement of said axle in an axial direction relative to said spindle, and the vertical position of said nut relative to said yoke being selectively adjustable, thereby to adjust the upper limit of movement of said control rod relative to said follower.

4,357,788

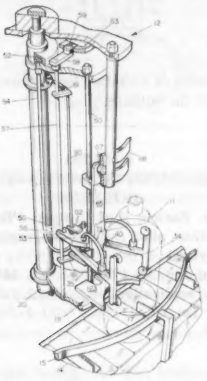
METHOD AND APPARATUS FOR ASSEMBLING TUBULAR SLEEVE PREFORMS AND CONTAINERS

Stephen W. Amberg, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 19,027, Mar. 9, 1979, abandoned. This application Dec. 8, 1980, Ser. No. 214,293
Int. Cl.³ B65B *7/28*
U.S. Cl. 53—585 **13 Claims**

1. Combined apparatus for assembling tubular shrinkable thermoplastic sleeves telescopically onto hollow containers comprising a rotary turret mounted on a vertical axle, a series of pairs of juxtaposed vacuum heads with confronting faces,

first means for mounting each of said pairs of vacuum heads for independent vertical movement on said rotary turret, said pairs of vacuum heads being mounted on said turret in equi-spaced radial arrangement, second means mounting at least one member of each pair of said vacuum heads on said first mounting means for independent pivotal movement in a substantially horizontal plane and about a substantially vertical pin while maintaining the confronting face of each of said vacuum heads in a substantially vertical plane, conveyor means for moving said hollow containers in upright spaced-apart alignment through an arcuate substantially horizontal path coincidental with a portion of the orbital path of the vacuum heads on said turret, means for rotating said turret in timed relation with said conveyor means to thereby move said vacuum heads in a circumferential path of a constant radius, holding means for retaining a plurality of preformed tubular sleeves in flattened condition nested in a stack held radially and adjacent to said turret, means for serially removing the outermost sleeve from the stack and introducing same radially in substantially vertically disposed axial orientation with one open end lowermost into said circumferential path intermediate at least one pair of



juxtaposed open vacuum members on said head to be engaged thereby, first stationary horizontal annular cam means, means connecting said first annular cam means to said second mounting means for serially horizontally pivoting said at least one member of each of said pairs of vacuum heads about its vertical pin towards the other member of each of said pairs of vacuum heads to grasp said interposed sleeve and for moving said one of said members of said pair of juxtaposed vacuum members positively away from said other member of said pair of vacuum members along said substantially horizontal plane while maintaining the faces of said heads in substantially vertical planes to fully open the tubular sleeve therebetween during each complete rotation of said rotary turret, second stationary annular cam means, and means connecting said second annular cam means to said first mounting means for serially moving each of said pairs of vacuum heads downwardly and upwardly during each complete rotation of said rotary turret to move each opened sleeve telescopically downwardly in coaxial alignment with an individual container conveyed on said conveyor means for its placement thereon and then withdraw each of said pairs of vacuum heads upwardly.

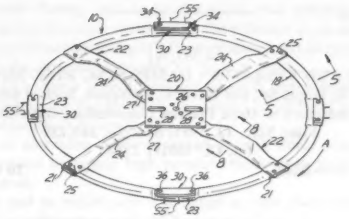
4,357,789

SAFETY GRASS CUTTER FOR ROTARY LAWN MOWER

John Rodish, Ft. Wright, Ky., assignor to Polynovus Industries, Inc., Ft. Wright, Ky.

Filed Mar. 17, 1981, Ser. No. 244,604
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—295 **15 Claims**

1. A lawn mower rotary safety cutter device comprising an annular ring, a hub, at least a pair of spokes interconnecting and joining together the ring and the hub, and a plurality of spring steel cutter members projecting radially outwardly of the periphery of the ring for cutting grass during rotation of the ring, and means providing yieldable deflection of each grass cutter member up to within the perimeter of the ring upon striking an obstruction during rotation of the ring, wherein at least one of said cutter members is disposed in one of a plurality of cutter assembly mounting units mounted on said ring on mounting surfaces formed at regularly spaced apart locations, each of said cutter members is a helical spring



having a coil portion and a pair of straight legs tangentially projecting from said coil portion, and each of said cutter assembly mounting units has an integral peg and the coil portion of said spring is mounted over said peg, one of said spring legs being retained in a slot in said cutter assembly mounting unit and the other of said spring legs forming said cutter member, said device further comprising interlocking means on said cutter assembly mounting unit and on a mounting surface on said ring fo removably mounting each of said cutter assembly mounting units on one of said mounting surfaces.

4,357,790

METHOD AND APPARATUS FOR PICKING OLIVES OR OTHER FRUITS

James C. Tyros, R.F.D. 1 River Rd., New Ipswich, N.H. 03071

Filed Jul. 17, 1980, Ser. No. 169,649
Claims priority, application Greece, Jul. 31, 1979, 59742
Int. Cl.³ A01D *46/00*
U.S. Cl. 56—328 R **10 Claims**

1. Portable, hand supported and hand manipulated apparatus for enabling the picking of tree growing olives, by a person from ground level, said apparatus comprising:

a picking head having a collection hopper with a front and rear wall, a pair of opposite end walls, an open top and a bottom wall with a discharge opening;

a ledge extending along the rim of said open top on said front wall;

a rake-like member comprising a shaft extending across said hopper and journalled centrally in said opposite end walls, proximate the level of said open top, said shaft having a plurality of straight rows of equally spaced hooked tines spaced therearound and projecting outwardly therefrom and said tines being inflexible and having free terminal tips

adapted to define a circular path including a zone wherein they are closely spaced from, and nearly touch said ledge along said front wall of said hopper;

an elongated, sectional, handle supporting said head for manipulation thereof by a person standing on the ground;

power means including a motor in said head, operably connected to said shaft for rotating the same unidirectionally, and powered from ground level;

and discharge conduit means, connected to the discharge opening in said bottom wall for guiding picked olives from said hopper to a receptacle on the ground.

4,357,791

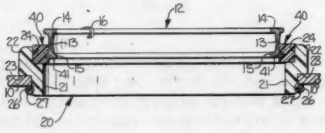
NOISE AND VIBRATION DAMPENING RING MOUNT

William K. Hope, Sr., and David C. Frederick, both of Gastonia, N.C., assignors to Hope Plastics Corporation, Gastonia, N.C.

Filed Mar. 12, 1981, Ser. No. 243,139

Int. Cl.³ D01H *7/64*

U.S. Cl. 57—122 **10 Claims**



1. In a spinning frame including a metallic ring rail with spaced apart annular openings therein, a metallic ring supported in each of said annular openings, said ring including a main body and upper and lower flanges, a traveler supported on said upper flange for rotational movement around said ring, the combination therewith of improved noise and vibration dampening ring mounting means supporting said metallic ring and comprising

(a) a hard plastic mounting support,

(b) means for securing said mounting support on said ring rail and surrounding said annular opening,

(c) a soft plastic insert supported within said mounting support and including an annular groove in the inner surface of said insert for receiving and supporting said lower flange of said ring, wherein the hardness of said soft plastic insert is no more than 75% of the hardness of said hard plastic mounting support so that said hard plastic mounting support and said soft plastic insert are positioned between said metallic ring rail and said metallic ring and cooperate to provide noise and vibration dampening means for resiliently supporting said metallic ring on said ring rail.

4,357,792

DEFLECTOR FOR SPINDLES IN DOUBLE TWISTING MACHINES

Armando D'Agnolo, Porcia; Luigi Colli, and Ugo Gaiotti, both of Pordenone, all of Italy, assignors to Officine Savio S.p.A., Pordenone, Italy

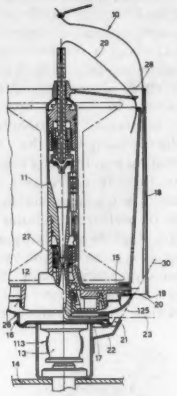
Filed Sep. 24, 1980, Ser. No. 190,637

Claims priority, application Italy, Sep. 24, 1979, 60457/79[U]

Int. Cl.³ D01H *7/86, 15/00*

U.S. Cl. 57—279 **11 Claims**

1. In a twisting machine spindle comprising a pneumatic filament threader and a rotating device containing a substantially horizontal outlet port for said filament and fluid and defining an outer wall and a rotating plate having a curved rim the improvement comprising a filament and fluid deflector positioned between a circumference described by the outer wall and a periphery of the rotating plate, said deflector being in a radial plane defined by the outlet port of the filament and



defining an extension of a contact face thereof directed toward the curved rim of the rotating plate.

4,357,793

SLIVER-PROCESSING FRAME HAVING DRAWING ROLLERS

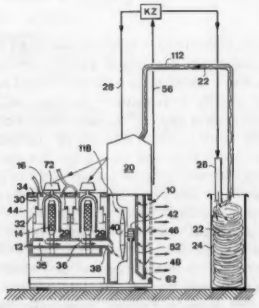
Hermann Gasser, Zurich; Karl Curiger, Pfäffikon, and Peter Novak, Winterthur, all of Switzerland, assignors to Luwa AG, Zurich, Switzerland

Filed Jun. 30, 1980, Ser. No. 164,067

Claims priority, application Switzerland, Jul. 6, 1979, 6333/79

Int. Cl.³ D01H *11/00, 5/18*

U.S. Cl. 57—304 **11 Claims**



1. A sliver processing frame, comprising:

at least one set of drawing rollers;

at least one conveying tube for conveying a sliver to the drawing rollers;

a casing enclosing the drawing rollers;

means constituting a negative pressure source operatively connected with the casing;

said conveying tube being operatively connected to the casing;

means for admitting cleaning air to the casing and the drawing rollers;

said means constituting said negative pressure source comprising a common source for casing cleaning air to enter the casing via the cleaning air admitting means and for generating an air flow in the conveying tube for transport-

ing the sliver through the conveying tube to the drawing rollers; and

means connecting said common source with said casing.

4,357,794

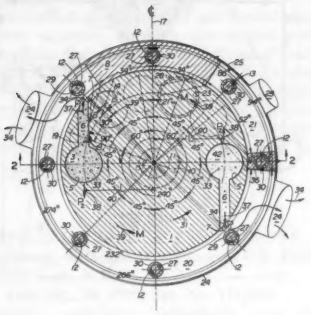
ROTARY-REACTIVE INTERNAL COMBUSTION ENGINE 4-360

Alexander Nelson, 606 E. Juneau Ave., Milwaukee, Wis. 53202

Filed Jul. 17, 1980, Ser. No. 169,733

Int. Cl.³ F02C *5/02*

U.S. Cl. 60—39.34 **10 Claims**



1. A rotary-reactive internal combustion engine of the type having a stator and a rotor which is rotatable in one direction, characterized by:

A. the rotor having

(1) a shaft with a disc fixed thereto intermediate its ends, said disc having flat and parallel opposite faces,

(2) two pairs of diametrically opposite cylinders in the disc, each having a round port, said ports having the same diameter, said ports of each pair opening to opposite faces of the disc,

(3) and a reactive duct in the disc leading to its periphery from each cylinder at an angle of 90° to the cylinder axis, said ducts having the same diameter, said ducts extending in a direction opposite to that of rotor rotation and each terminating in a reactive nozzle at the periphery of the disc, said nozzles extending circumferentially through an angle substantially 8°;

B. the stator comprising similar left and right stator housings fixed to one another and overlying the opposite faces of the rotor disc, said housings having bearing means to rotatably receive the rotor shaft, said stator having

(1) diametrically opposite air-fuel admission ports, one in each stator housing, located to be registrable with the cylinder ports during rotation of the rotor, said admission ports having the same diameter as the cylinder ports, and each such admission port having an injector nozzle through which air-fuel mixture must flow to reach its respective cylinder port,

(2) diametrically opposite spark plugs, one in each stator housing, located in circumferentially spaced relation to its respective admission port by an angle of substantially 30° in the direction of rotor rotation, said spark plug located inside a niche means,

(3) diametrically opposite exhaust canals, one in each stator housing, to receive combustion gases from the cylinders, each such canal extending circumferentially through an angle of substantially 232° in the direction of rotor rotation from a location adjacent to its associated admission port,

(4) a first pair of diametrically opposite walls, one in each stator housing, located alongside the rotor periphery and extending through an arc of substantially 68° in a direction opposite to that of rotor rotation, from a location at the end of its exhaust canal first swept by the reactive nozzles in the rotor,

(5) a second pair of diametrically opposite walls, one in each stator housing, located at the end of its exhaust canal last swept by the reactive nozzles and each such wall extending circumferentially through an angle substantially 8°,

(6) diametrically opposite admission canals, one in each stator housing, for delivering high pressure fresh air circumferentially to the cylinders, each such canal being located between said first and second pairs of walls,

(7) diametrically opposite scavenging ports, one in each stator housing, located to be registrable with the cylinder ports during rotation of the rotor, said scavenging port having the same diameter as the cylinder ports and being located substantially 60° from its associated admission port in the direction opposite to rotor rotation,

(8) an exhaust pipe connected to each stator housing and leading outwardly from its exhaust canal from a location adjacent to its spark plug,

(9) an admission pipe connected to each stator housing and located to supply high pressure fresh air to its admission canal,

(10) and an outlet pipe connected to each stator housing in communication with its scavenging port.

4,357,795

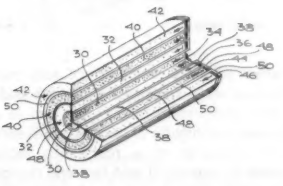
MULTI-BURN SOLID FUEL RESTARTABLE ROCKET AND METHOD OF USE

Thomas W. Bastian, and J. Sydney Roberts, both of Fullerton, Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Apr. 14, 1980, Ser. No. 140,056

Int. Cl.³ F02K *9/12, 9/22*

U.S. Cl. 60—204 **17 Claims**



1. a multi-burn solid fuel restartable rocket motor comprising:

a motor housing of tubular shape;

a nozzle adjacent said housing for transmission of exhaust gases;

a multi-layer propellant comprising a central solid core of propellant and at least one concentric layer of propellant separated by a burn inhibiting barrier effective to prevent burning between said layers; and

ignition means capable of independently igniting each layer individually and producing end burning of at least said solid core.

4,357,796

SMALL GAS TURBOFAN ENGINE WITH REGENERATING DIFFUSER

Stanley H. Ellis, Palm Beach Gardens, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 30, 1980, Ser. No. 192,163

Int. Cl.³ F02K *3/068;* **F02C** *7/10*

U.S. Cl. 60—262 **10 Claims**

1. A small gas turbofan engine having a longitudinal axis and comprising:

a. an outer casing encircling said axis and disposed such that it is positioned symmetrically around said axis, with said

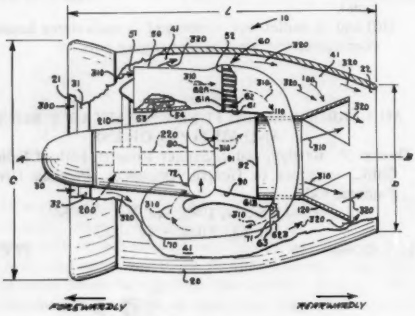
casing having a forwardly located air inlet and a rearwardly located exhaust nozzle;

b. a fan disposed in said air inlet, and positioned perpendicular to, and symmetrical with respect to, said axis;

c. an annular fan air duct located internally of said outer casing and leading from said fan to said exhaust nozzle;

d. a high pressure compressor located internally of said outer casing, operatively connected to said turbine, and disposed such that it is displaced from said axis and also is concurrently positioned within said fan air duct, with said high pressure compressor having an open, forwardly positioned, first end and an open, rearwardly positioned, second end;

e. a plurality of pipe diffusers disposed internally of said outer casing, with each pipe diffuser having an open first end in communication with said open, rearwardly positioned, second end of said high pressure compressor, and with each pipe diffuser having an open second end, with all said second ends collectively terminating in a pipe bundle;



f. a burner disposed internally of said outer casing, and positioned offset from said axis, with said burner having an open, rearwardly facing, first end in communication with said pipe bundle of said pipe diffusers, and with said burner having an open, rearwardly facing, second end disposed forwardly of said first end thereof;

g. a toroidally-shaped plenum chamber in communication with said open second end of said burner;

h. a multiple-stage turbine disposed internally of said outer casing, operatively connected to said fan and to said compressor, with said turbine having an open, forwardly facing, inlet first end in communication with said toroidally-shaped plenum chamber, and with said turbine also having an open, rearwardly facing, outlet second end across which are positioned said pipe diffusers which, thereby, form a stationary heat exchanger of the regenerator type;

i. and, a mixer assembly disposed internally of said outer casing, interposed between said multiple-stage turbine and said exhaust nozzle, operatively connected to said outlet second end of said multiple-stage turbine, and positioned in part in said fan air ducts.

4,357,797

UNIFIED ACTION HYDROCENTRIFUGAL MACHINES

Fred M. Siptrott, 3011 Hardies La., Santa Rosa, Calif. 95401

Filed Mar. 14, 1980, Ser. No. 130,415

Int. Cl.³ F01D *13/00*

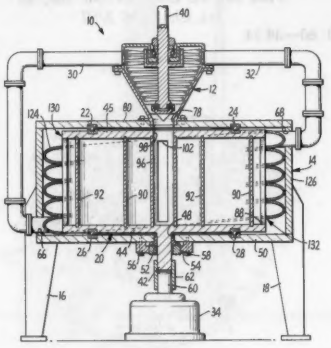
U.S. Cl. 60—330 **4 Claims**

1. A hydrocentrifugal machine containing a body of working fluid, and comprising:

a stator chamber comprising a cylindrical wall and having first and second peripheral outlet ports, the principal part of the cylindrical walled stator chamber being divided into two parts by two generally spiral-shaped walls;

a hydroturbine mounted above said stator chamber, having two intake ports, and being adapted to emit its efflux into the central portion of a rotor chamber;

conduit means providing fluid passages from said outlet ports to corresponding ones of said hydroturbine intake ports; and



rotor means rotatably mounted in said stator chamber and adapted to receive said efflux through its hollow shaft;

said hydroturbine comprising both impulse blade systems and reaction blade systems; and further including a helical channel member located in said stator chamber and affixed to the inner wall thereof, the lips of each turn of said helical channel being affixed to the lips of the adjacent turns thereof, and the open face of said helical channel facing the axis of said cylindrical chamber.

4,357,798

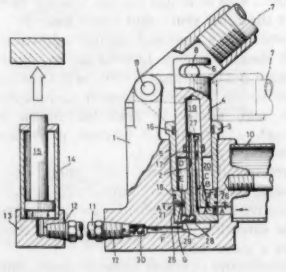
RAPID ACTUATING DEVICE OF HYDRAULIC ACTUATOR

Michael Hung, 6th Fl., No. 65, Sec. 3, Nanking E. Rd., Taipei, Taiwan

Filed Mar. 13, 1980, Ser. No. 129,843

Int. Cl.³ F16D *31/02;* **F04B** *49/08, 19/02*

U.S. Cl. 60—477 **1 Claim**



1. A hydraulic actuator for use in extending a ram relative to its associated ram cylinder comprising in combination:

a first cylinder supported in a base,

a first piston operatively disposed therein connected to means for translating said first piston within said first cylinder,

a bore within said first piston defining a second cylinder,

a second piston operatively disposed within said second

cylinder whereby translation of said first piston causes volumetric change in said second cylinder,

and valved hydraulic fluid conduit means extending between said pistons and said ram whereby translation of said first piston moves said ram,

wherein said conduit means includes an hydraulic pressure sensitive bypass means whereby a portion of hydraulic fluid pumped by said pistons can be diverted back to a reservoir and said ram will move more slowly,

wherein said bypass means comprises a relief valve disposed on a passageway which forms a portion of said conduit means, said passageway extends from said first cylinder to said ram,

wherein said relief valve comprises an elastic piece disposed in a groove on a lower portion of said second piston, said passageway extending through said second piston and communicating with said groove through a hole in said second piston, a ball covering said hole and biased thereagainst by a free end of said elastic piece, a fixed end of which is constrained in said groove on said second piston whereby hydraulic pressure in excess of the elastic piece's resiliencey displaces said ball and causes the hydraulic fluid to bleed therethrough to said reservoir.

4,357,799

HOT-GAS RECIPROCATING MACHINE

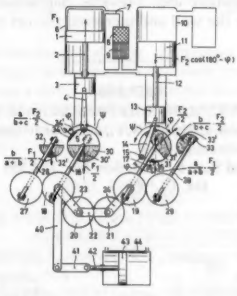
Jan Vos, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 24, 1980, Ser. No. 171,694

Claims priority, application Netherlands, Aug. 10, 1979, 7906116

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—518 **3 Claims**



1. A hot-gas reciprocating machine comprising first and second spaces of variable volume which communicate with each other through a regenerator, and first and second pistons for varying the volumes of the first and second spaces respectively, the first and second pistons being connected to parallel first and second crank shafts respectively and being movable with an adjustable phase difference, wherein each of the crank shafts carries counterweight whose centre of gravity is situated in the plane containing the axis of the respective crank shaft and the axis of the crank pin through which the respective piston is connected to that crank, and of which counterweight the centrifugal force occurring during operation of the machine corresponds to half the force produced by the reciprocating parts coupled to the relevant crank shaft, wherein on the side of the first crank shaft which is remote from the second crank shaft there is provided a first auxiliary shaft which extends parallel to the first crank shaft and which is coupled thereto in such a manner that the auxiliary shaft rotates in the opposite direction to and at the same speed as the first crank shaft, the first auxiliary shaft carrying at least one counterweight whose centre of gravity is so situated that during operation the horizontal and vertical components of the centrifugal force of the latter counterweight always act respectively in the opposite direction to and the same direction as the corresponding components of the centrifugal force of the counterweight on the first crank shaft, and wherein on the side of the second crank shaft which is remote from the first crank shaft there is provided a second auxiliary shaft which extends parallel to the second crank shaft and which is coupled thereto in such a manner that the second auxiliary shaft rotates in the opposite direction to and at the same speed as the second crank shaft, the second auxiliary shaft carrying at least one counterweight whose centre of gravity is so situated that during operation the horizontal and vertical components of the centrifugal force of the latter counterweight always act respectively in the opposite direction to and the same direction as the corresponding components of the centrifugal force of the counterweight on the second crank shaft.

4,357,800

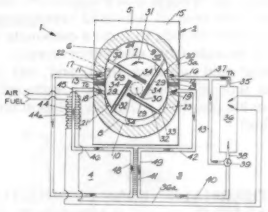
ROTARY HEAT ENGINE

Walter G. Hecker, 3401 McHenry Ave., Cincinnati, Ohio 45225

Filed Dec. 17, 1979, Ser. No. 104,749

Int. Cl.³ F02G *1/06, 1/04*

U.S. Cl. 60—519 **13 Claims**



1. A rotary heat engine comprising:

a stator having an oval rotor chamber defined by a pair of adjoining lobes forming a high temperature fluid chamber and a low temperature fluid chamber, respectively, each of said fluid chambers including spaced fluid inlet and outlet ports;

a substantially cylindrical rotor rotatably mounted within said rotor chamber such that said high temperature chamber defines a greater volume than said low temperature chamber, said high temperature chamber being separated from said low temperature chamber by the rotor positioned therebetween, said rotor including a plurality of radially extending vane accepting slots;

an extensible vane slidably received in each of said slots, said vanes making sliding contact with the inner wall surface of said rotor chamber to affect a sliding seal;

fluid heating means connected between said low temperature chamber outlet port and said high temperature chamber inlet port for heating fluid admitted into said high temperature chamber;

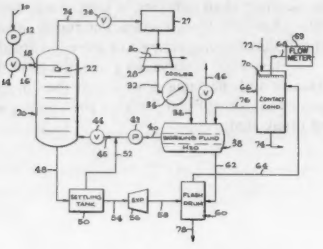
heat rejection means connected between said high temperature chamber outlet port and said low temperature chamber inlet port for cooling fluid admitted into said low temperature chamber; and

means for moving said rotor eccentrically within said rotor chamber to increase or decrease the relative volumes of said high temperature and low temperature chambers, respectively.

4,357,801
REMOVAL OF CARBON DIOXIDE IN GEOTHERMAL POWER SYSTEMS

Edward F. Wahl, III, Claremont, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Jan. 22, 1980, Ser. No. 114,386
Int. Cl.³ F03G 7/00
U.S. Cl. 60—641.3 **14 Claims**



1. A process for removing carbon dioxide from a vapor stream containing carbon dioxide and a working fluid, said vapor stream being generated from a geothermal fluid in a geothermal energy recovery process, said process for removing carbon dioxide comprising:

(a) introducing said vapor stream containing carbon dioxide into a condenser zone;

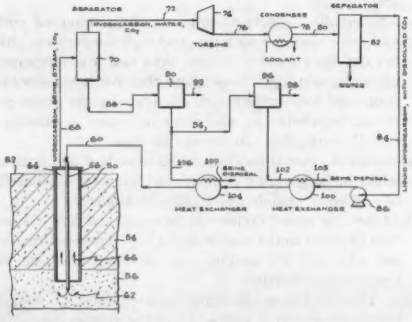
(b) introducing an aqueous alkaline solution into said condenser zone into contact with said vapor stream, to react with said carbon dioxide to form a carbonate and remove said carbon dioxide from said vapor stream;

(c) condensing said working fluid; and, (d) passing said condensed working fluid having a reduced content of carbon dioxide into heat exchange relation with said geothermal fluid.

4,357,802
GEOTHERMAL ENERGY PRODUCTION

Edward F. Wahl, III, Claremont, and Frederic B. Boucher, San Juan Capistrano, both of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 875,139, Feb. 6, 1978, abandoned. This application Mar. 21, 1980, Ser. No. 132,407
Int. Cl.³ F03G 7/00
U.S. Cl. 60—641.5 **1 Claim**



1. A process for recovery of energy from geothermal fluids including geothermal brine in a geothermal formation, which comprises:

(a) providing at least one injection well in a geothermal formation containing geothermal brine;

(b) providing at least one production well in said formation, said injection well having a diameter less than said production well and being disposed axially within said production well, and providing an annulus between said injection well and said production well;

(c) injecting a relatively cool pressurized hydrocarbon working fluid through said injection well and into said geothermal formation, and flowing said working fluid in direct contact heat exchange through said geothermal brine in said formation to heat said working fluid and produce a hot pressurized working fluid;

(d) withdrawing said hot pressurized working fluid through said annulus, said hot pressurized working fluid containing brine, steam and uncondensible gas including CO_2;

(e) separating said brine from said hot pressurized working fluid containing CO_2 and steam;

(f) flashing said brine to flash off steam and employing said steam for power generation or process heat or both;

(g) withdrawing brine from said flashing in step (f);

(h) work expanding said hot pressurized working fluid containing CO_2 and steam from said separating step (e);

(i) condensing the resulting mixture of working fluid, CO_2 and steam in a pressurized condenser;

(j) withdrawing condensed water from said pressurized condenser;

(k) withdrawing liquid working fluid containing dissolved CO_2 from said condenser;

(l) compressing said liquid working fluid containing dissolved CO_2 from step (k) up to a predetermined pressure;

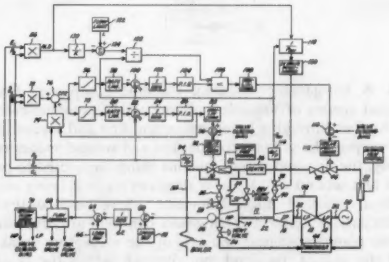
(m) passing said pressurized working fluid containing dissolved CO_2 in countercurrent indirect heat exchange relation with said brine separated in step (f); and,

(n) reinjecting said pressurized working fluid containing dissolved CO_2 from step (m) into said injection well, whereby the dissolved CO_2 in the hydrocarbon injected into the injection well prevents deposition of calcium carbonate in the well and increased the net power output per well.

4,357,803
CONTROL SYSTEM FOR BYPASS STEAM TURBINES

Royston J. Dickenson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 5, 1980, Ser. No. 184,359
Int. Cl.³ F01K 13/02
U.S. Cl. 60—662 **18 Claims**



1. An automatic control system for a steam turbine operating in conjunction with a boiler supplying steam under pressure, the turbine having a high-pressure (HP) section, at least one lower pressure (LP) section, a steam conduit interconnecting the HP section to the LP section through a steam reheater, at least one admission control valve for regulating the flow of steam to the HP section, and at least one intercept valve for regulating the flow of steam to the LP section, said control system comprising:

an HP bypass subsystem for passing steam around said high-pressure section, said bypass subsystem including at least

one HP bypass valve for regulating steam flow in said HP bypass subsystem;

an LP bypass subsystem for passing steam around said lower pressure section, said bypass subsystem including at least one LP bypass valve for regulating steam flow in said LP bypass subsystem;

a load and speed control loop for operating said admission control valve to maintain preset turbine speed and load;

means providing a combined flow reference (CFR) signal indicative of total steam flow from the boiler;

an HP bypass control loop for operating said HP bypass valve to control boiler steam pressure in accord with a first reference signal; said first reference signal being determined from said CFR signal; and

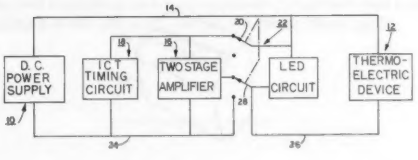
an LP bypass control loop for operating said LP bypass valve to control reheater steam pressure in accord with a second reference signal, said second reference signal being determined from said CFR signal.

4,357,804

THERMOELECTRIC DEVICE

Shlomo Beitner, Tel-Aviv, Israel, assignor to Bipol Ltd., Tel-Aviv, Israel

Filed Feb. 20, 1981, Ser. No. 236,550
Int. Cl.³ F25B *21/02*
U.S. Cl. 62—3 **6 Claims**



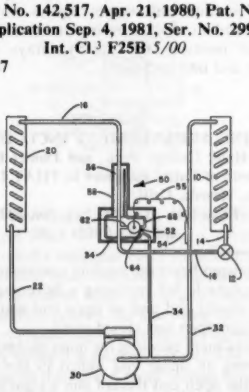
1. A thermoelectric device comprising a thermoelectric element having a hot face and a cold face, power supply means for impressing a direct current potential across said faces, and solid state means comprising an integrated circuit timer for converting said direct current potential into a direct current digital pulse.

4,357,805

METHOD FOR INTEGRATING COMPONENTS OF A REFRIGERATION SYSTEM

John D. Manning, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 142,517, Apr. 21, 1980, Pat. No. 4,316,366. This application Sep. 4, 1981, Ser. No. 299,351
Int. Cl.³ F25B *5/00*
U.S. Cl. 62—117 **9 Claims**



1. A method of operating a refrigeration circuit having a compressor, condenser and evaporator which comprises the steps of:

connecting the components of the refrigeration circuit such that liquid refrigerant from the condenser circulates to the evaporator through an intermediate heat exchanger;

joining the components of the refrigeration circuit such that gaseous refrigerant from the evaporator circulates to the compressor;

diverting a portion of the refrigerant circulating from the condenser to the evaporator to the intermediate heat exchanger wherein the refrigerant is vaporized absorbing heat energy from the liquid refrigerant flowing to the evaporator;

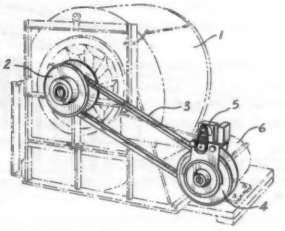
routing the diverted portion of the refrigerant from the intermediate heat exchanger to the step of joining such that the diverted portion of the refrigerant from the intermediate heat exchanger flows to the compressor with the gaseous refrigerant from the evaporator at the same suction pressure.

4,357,806

CONTROLLER FOR VARIABLE AIR VOLUME COOLING SYSTEM

Charles G. Harris, Coon Rapids, Minn.; Erwin P. Mora, Lancaster, S.C.; Mahendra P. Singh, Columbus, Ind., and David P. Solberg, Scandia, Minn., assignors to Dana Corporation, Toledo, Ohio

PCT No. PCT/US80/01110, § 371 Date Oct. 10, 1980, § 102(e) Date Oct. 10, 1980, PCT Pub. No. WO82/00874, PCT Pub. Date Mar. 18, 1982
PCT Filed Aug. 28, 1980, Ser. No. 251,528
Int. Cl.³ F25D *17/04*
U.S. Cl. 62—186 **3 Claims**



1. In a variable air volume cooling system,

fan means for blowing air into an area to be cooled,

means for varying the amount of air blown into said area including a driver variable pitch pulley means, a driven variable pitch pulley means, and a belt means connected between said driver and driven pulley means, whereby changes in the pitch of said driver pulley means varies the diameter of the belt on said driver to effect changes in the speed of said fan means, driving motor means connected to said driver pulley means, servo-motor means mounted to drive a means for effecting changes in the pitch of the driver pulley means; a first electrical signal derived from a temperature sensing means in said area to be cooled, pulse generating means connected to said fan means producing second signals indicative of the speed thereof, means for comparing said first and second signals to produce a control signal which is connected to said servo-motor means to effect a change in said diameter, said means for comparing including: means for shaping said signal to be the actual temperature condition signal applied to the inverting input of a difference amplifier means; means for converting the pulses of said second signal into an analog reference signal connected to the non-inverting input of said difference amplifier means; means for adjusting the minimum speed of the fan means, means for adjusting the maximum speed of the fan means, said two

adjusting means connected to said means for shaping said first signal; a first and a second comparator difference amplifiers are connected to the output of said difference amplifier whereby said first comparator produces output when the output of said difference amplifier is positive, and said second comparator produces outputs when the output of said difference amplifier is negative, the output of said first comparator is connected to a first solid state switch, the output of said second comparator is connected to a second solid state switch; said time delay means is connected to each of said solid state switches to effect the control deactivation until the fan reaches operating speed, the outputs of said solid state switches are connected to a first and a second current isolating driver means and to first and second triacs; the output of said first solid state switch is connected to said first current isolating driver means to which is connected said first triac, the output of said second solid state switch is connected to said second current isolating driver means to which connected said second triac; servo-motor power means connected to said triacs and said servo-motor so that driving signals on said first triac produce clockwise operation of said servo-motor and driving signals on said second triac produce counter-clockwise operation of said servo-motor.

4,357,807

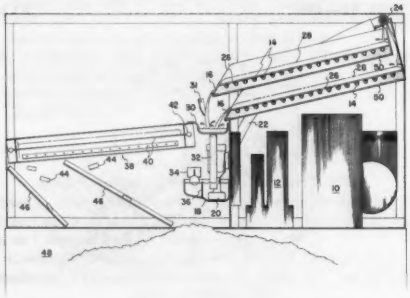
LOW ENERGY ICE MAKING APPARATUS

Jerry Aleksandrow, 415 Crescent, Lombard, Ill. 60148

Filed Jan. 9, 1981, Ser. No. 223,569

Int. Cl.³ F25C *1/12*

U.S. Cl. 62—228 **14 Claims**



1. An ice making apparatus comprising

an inclined evaporator on the upper surface of which a slab of ice may be formed, said evaporator surface being formed of a thermally semiconductive chromium steel material and having means for directing a refrigerant on a preselected path in thermal contact with the lower surface of said evaporator;

a low volume, low velocity compressor having an inlet and an outlet;

a primary condenser having an inlet and an outlet;

a secondary condenser cube cutting grid including first and second arrays of substantially parallel, spaced apart refrigerant conducting tubes, one disposed above the other at an angle thereto, each said array being coupled at one end to an intake manifold and at the other to an outlet manifold;

means for coupling said compressor outlet to the inlet of said primary condenser;

means for coupling said primary condenser outlet to said secondary condenser cube cuting grid inlet manifold;

means for coupling said secondary condenser cube cutting grid outlet manifold to a first end of said refrigerant path;

means for coupling the other end of said refrigerant path to the inlet of said compressor;

means for circulating water over the surface of said evaporator surface while a refrigerant is directed from said secondary condenser cube cutting grid through said evaporator whereby a slab of ice is progressively formed over the surface of said evaporator;

timing means for interrupting the circulation of water over the evaporator surface at preselected intervals of time;

means coupled to the outlet of said compressor and to said timing means for directing compressed refrigerant to said evaporator to thereby progressively warm said evaporator surface and release said slab of ice onto said secondary condenser cube cutting grid; whereby heat is transferred from said refrigerant conducting tubes of said cube cutting grid to said ice slab to thereby cut said ice slab into cubes;

means coupled to said timing means for sensing the release of said slab of ice and operative to reset said timing means; and

means for collecting and storing said ice cubes.

4,357,808

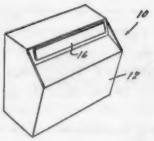
ICE MAKING MACHINE

John T. Olson, Albert Lea, and Robert K. Westergaard, Alden, both of Minn., assignors to King-Seeley Thermos Co., Prospect Heights, Ill.

Continuation of Ser. No. 921,836, Jul. 3, 1978, abandoned. This application Feb. 13, 1980, Ser. No. 121,148

Int. Cl.³ F25C *1/04*

U.S. Cl. 62—347 **18 Claims**



1. In combination in an ice making machine,

an ice forming mold,

a water reservoir with an open top and disposed below said mold,

a spray bar disposed for rotation about a generally horizontal axis and located vertically between said reservoir and said mold,

said spray bar including at least one radially disposed spray port, and

means for rotating said spray bar 360° about said horizontal axis whereby said spray port, during each revolution of said spray bar, alternately rotates to a downwardly directed position and thereby sprays water downwardly toward and into said reservoir, and rotates to an upwardly directed position and thereby sprays water upwardly toward and into said mold.

4,357,809

COOLING ARRANGEMENT INCLUDING A GEL

Edward J. Held, Canoga Park, and Daniel Broder, Westlake Village, both of Calif., assignors to THAT Distributing Company, Inc., Reseda, Calif.

Filed Oct. 31, 1980, Ser. No. 202,465

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—457 **9 Claims**

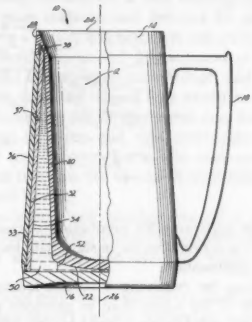
1. An insulated beverage cooling container comprising:

an inner receptacle for receiving a beverage, the receptacle having a closed end and an open end and a wall disposed between said open and closed ends;

an outer encasement encasing the inner receptacle, said encasement having an upper end joined to the inner receptacle adjacent the open end thereof and a rigid exterior wall surrounding the wall of the inner receptacle and forming thereby a closed cavity between the inner receptacle and the encasement;

a layer of cellular, compressible heat-insulating material within the cavity secured to the inside surface of the exterior wall of the encasement; and

a solid gel refrigerant disposed within the cavity between the compressible insulation layer and the wall of the receptacle,



said gel being in direct contact with the compressible insulation layer and having a freezing temperature of about 30° F., the compressible insulation layer being capable of compressing and expanding under corresponding expansion and contraction of the gel as it undergoes a freeze/thaw cycle.

4,357,810

UNIVERSAL JOINT

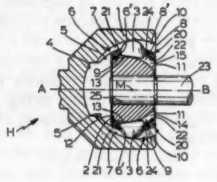
Zvonimir Z. Kumpar, Zeist, Netherlands, assignor to SKF Industrial Trading & Development Co. B.V., Netherlands

Filed Dec. 19, 1980, Ser. No. 218,306

Claims priority, application Netherlands, Dec. 20, 1979, 7909198

Int. Cl.³ F16D *3/30*

U.S. Cl. 464—8 **9 Claims**



1. A universal coupling comprising an outer ring having a generally spherical inner surface defining a cavity, an inner ring having a generally spherical outer surface situated in and corresponding to said inner surface, a plurality of generally axially extending raceways, each formed as a groove-like outer ring race and a mating groove-like inner ring race in the inner and outer surfaces respectively, a plurality of balls flattened on one face movably situated in each of said raceway, the flat face of each ball engaging the curved outer surface of an inner ring race, and a flexible ball cage situated between said inner and outer surfaces and having a plurality of apertures with one of said balls extending through and being guided by each of said apertures.

4,357,811

CONTINUOUS PROCESSING APPARATUS FOR TREATMENT OF TUBULAR KNITTED FABRIC MATERIAL

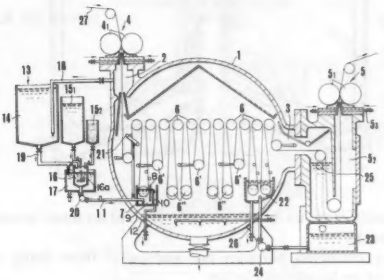
Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Nov. 17, 1980, Ser. No. 207,426

Claims priority, application Japan, Nov. 21, 1979, 54-161604[U]; Jul. 15, 1980, 55-96509; Jul. 16, 1980, 55-97094

Int. Cl.³ D06B *3/12*

U.S. Cl. 68—5 E **2 Claims**



1. A continuous processing apparatus for treatment of a tubular knit fabric material having a high pressure steamer drum body provided with a fabric material inlet and a fabric material outlet, said inlet being provided with an entrance seal mechanism arranged to continuously pass the fabric material into said drum body, said outlet being provided with an exit seal mechanism which has a gradual cooling tank, said apparatus comprising in combination:

a preparatory washing tank disposed within the steamer drum body;

a liquid supply passage arranged to gradually supply water of high temperature overflown from said gradual cooling tank to said preparatory washing tank;

a hot water tank which is disposed outside of said high pressure drum body and is provided with a suitable heating means;

a heat retaining tank arranged to have the hot water of said hot water tank introduced into the heat retaining tank;

a mixing tank disposed within said heat retaining tank, said mixing tank being provided with one or a plurality of undiluted solution supply pipes and a pipe for supplying the hot water contained in said hot water tank; and

a solution supply passage for applying a heated solution contained in said mixing tank to the fabric material within said steamer drum body.

4,357,812

TUB HAVING A DEBRIS COLLECTOR FOR AN AUTOMATIC WASHER

Albert T. Braga, Lincoln Township, Berrien County, and William Ohmann, St. Joseph Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 15, 1980, Ser. No. 178,386

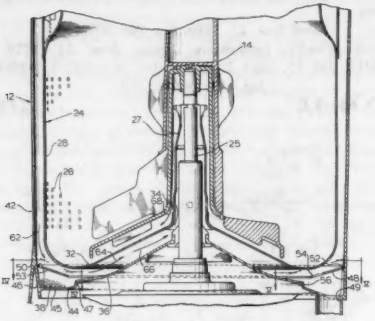
Int. Cl.³ D06F *13/02, 39/06*

U.S. Cl. 68—18 D **7 Claims**

1. In an automatic clothes washing machine of the vertical axis type having a generally axially symmetric imperforate tub with a side wall and a bottom wall for containing wash liquid; a basket rotatably mounted about said axis within said tub; and a debris collection means; said collection means comprising: means forming an annular channel in said bottom wall of said tub,

said channel being at least partially covered by an annular baffle,

said annular baffle having an outer circumference mounted on said side wall of said tub and said baffle slopes downwardly from its outer circumference to an inner circumference,



whereby collected particles are prevented from being redeposited on laundered clothes.

4,357,813

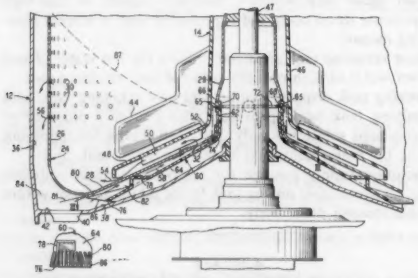
SELF-CLEANING UNDER BASKET LINT FILTER FOR AUTOMATIC WASHERS

Robert B. Sherer, St. Joseph Township, Berrien County, and Edward E. Wiessner, Lincoln Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 1, 1980, Ser. No. 211,761

Int. Cl.[3] **D06F** *13/02, 39/10*

U.S. Cl. 68—18 F **14 Claims**



12. In an automatic washing machine of the vertical axis type having a generally axially-symmetric imperforate tub with a side wall and a bottom wall for containing wash liquid; a basket having a bottom wall and a side wall rotatably mounted about said axis within said tub and having at least two areas of liquid communication with said tub; and debris collection means; said collection means comprising:

an annular conical filter element positioned between said two areas of communication between said tub and said basket and cooperating exclusively with said basket bottom wall to form a path of communication between said two areas,

whereby collected particles are prevented from being redeposited on laundered clothes.

4,357,814

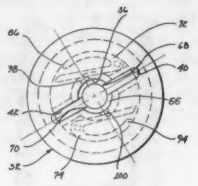
AIRCRAFT PETCOCK LOCK

George C. Kripner, 5420 E. Avalon Dr., Phoenix, Ariz. 85018

Filed Aug. 29, 1980, Ser. No. 182,838

Int. Cl.[3] **F16L** *35/00;* **F16K** *35/10;* **G05G** *5/00*

U.S. Cl. 70—232 **12 Claims**



1. A lock apparatus for precluding operation of a petcock operable by a depressible valve stem, said lock apparatus comprising in combination:

(a) a housing for receiving a button located proximate the extremity of the valve stem to preclude movement of the valve stem with respect to the petcock, said housing including a base apertured to accommodate penetration into said housing of the valve stem and button;

(b) means for restraining withdrawal of the received button;

(c) a ring rotatable within said housing for actuating said restraining means in response to rotation of said ring relative to said housing, said restraining means including laterally displaceable spring elements for interferingly retaining the button and lugs for repositioning laterally said spring elements upon rotation of said ring relative to said housing after penetration of the button through said base.

7. A lock apparatus for precluding operation of petcocks operable by longitudinal movement of a valve stem, said lock apparatus comprising in combination:

(a) a housing for receiving a segment of the valve stem to preclude movement of the valve stem with respect to the petcock, said housing including a base apertured to penetrably receive the segment which is either a valve stem having a cross arm or a valve stem having a button disposed proximate the end thereof;

(b) means for restraining withdrawal of the received segment;

(c) a ring rotatable within said housing for actuating said restraining means in response to rotation of said ring relative to said housing, said ring including a pair of diametrically opposed depressions for receiving opposed ends of the cross arm to locate the cross arm out of alignment with the aperture of said base upon relative rotation between said ring and said housing after penetration of the cross arm through said base, said retaining means including laterally displaceable spring elements for interferingly retaining the button and lugs for repositioning laterally said spring elements upon rotation of said ring relative to said housing after penetration of the button through said base.

4,357,815

LOCKS FOR VEHICULAR ANTITHEFT LOCK SYSTEM

Frank Kleefeldt, Heiligenhaus, and Horst Brackmann, Velbert, both of Fed. Rep. of Germany, assignors to Kiekert GmbH & Co. Kommanditgesellschaft, Velbert, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,452

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936402

Int. Cl.[3] **E05B** *15/14, 19/06, 29/06, 35/08*

U.S. Cl. 70—337 **10 Claims**

1. A lock assembly comprising:

a main lock having

a main-lock housing formed with a main axially extending and inwardly open groove;

a main-lock core plug rotatable in said main housing about

a main axis and forming an axially extending and open main passage;

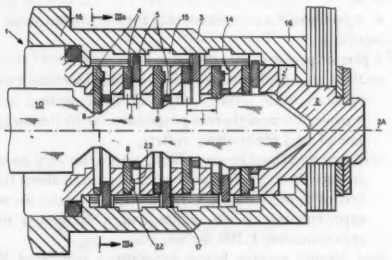
pluralities of first and second main tumblers exposed at said main passage and diametrally displaceable therein between outer positions engaged in said main groove and inner positions disengaged therefrom; and

means including formations in said housing cooperating with said main tumblers and defining for said plug in said housing a pair of end positions and an intermediate position therebetween for displacement of said plug between said end positions and through said intermediate position when all of said lock tumblers are in said inner positions and for displacement only between one of said end positions and said intermediate position when said first tumblers are in said inner positions but said second tumblers are in said outer positions;

a secondary lock having

a tubular secondary-lock housing having an inner wall generally centered on a secondary axis and formed with an axially extending and inwardly open secondary groove;

a secondary core plug in said secondary housing having an outer surface closely radially juxtaposed with said inner wall and a central axially extending and open key-receiving secondary passage, said secondary plug being rotatable in said secondary housing about said secondary axis; and



a plurality of axially spaced secondary tumblers exposed at said secondary passage in said secondary plug and diametrally displaceable therein along a diametral plane between outer positions projecting radially beyond said outer surface and inner positions lying radially within said outer surface, said secondary tumblers being displaceable into said outer positions when radially aligned with said secondary groove and said secondary core being blocked from rotating in said secondary housing when said secondary tumblers are engaged in said outer positions in said secondary groove, said secondary tumblers having respective control edges subdivided at said plane into first edge regions and second edge regions, at least some of said first edge regions being out of line with the respective second edge regions; and

first and second differently bitted keys engageable in said passages with the respective control regions and tumblers, said first key having first bits engageable only with said first regions and tumblers when said first key is in the respective passage and said second key having second bits engageable only with said second regions and tumblers when said second key is in the respective passage, said bits, first and second tumblers, and regions being so constructed and adapted that when either of said keys is fully engaged in the respective passage with the respective bits engaging the respective regions and tumblers the respective tumblers are in said inner positions.

4,357,816

METHOD OF PRODUCING HOLLOW ARTICLES BY DEEP DRAWING AND PRESS FOR EFFECTING SAME

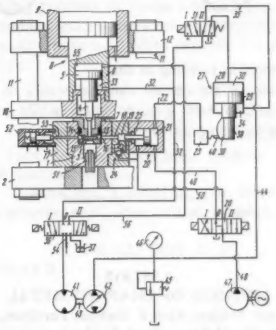
Evgeny A. Antonov, ulitsa Svobody, 6, kv. 27; Anatoly S. Matveev, ulitsa Frunze, 90, kv. 45; Nikolai I. Nikonov, ulitsa Voroshilova, 20, kv. 19; Boris N. Leonov, ulitsa Kirova, 17, kv. 16; Anatoly V. Razhev, ulitsa 9 Maya, 2, kv. 71, and Vyacheslav I. Prokofiev, ulitsa Svobody, 19, kv. 75, all of, Rybinsk Yaroslavskoi oblasti, U.S.S.R.

PCT No. PCT/SU79/00103, § 371 Date Aug. 21, 1980, § 102(e) Date Aug. 15, 1980, PCT Pub. No. WO80/01253, PCT Pub. Date Jun. 26, 1980

PCT Filed Oct. 30, 1979, Ser. No. 201,071

Int. Cl.³ B21D *39/08*

U.S. Cl. 72—57 **5 Claims**



1. A press for producing hollow articles by deep drawing of a blank comprising a high-pressure vessel, a die accommodated in said high pressure vessel and having a drawing rib engageable with a blank, a punch accommodated in said high pressure vessel, a punch-actuating hydraulic cylinder having a piston rigidly connected with said punch, a clamp formed with a collar for hermetic separation of a central portion of the blank from a peripheral portion and positioned opposite the drawing rib of the die, the die having an end surface which forms, together with an end surface of the clamp and with an inner surface of the high-pressure vessel, an annular high-pressure chamber wherein is positioned the peripheral portion of the blank, a high-pressure chamber of an intensifier communicating with said annular high-pressure chamber, a pressure regulator for controlling pressure in the annular chamber and incorporating a second hydraulic cylinder and a second piston whose cavity is brought in communication with a rod cavity of the punch-actuating hydraulic cylinder, an appliance for setting pressure in the annular high-pressure chamber, said appliance being fixed on a rod of the second piston, and a regulator of pressure created in the high-pressure chamber of the intensifier and acting on the peripheral portion of the blank, said pressure regulator having a sensitive element brought in contact with the pressure setting appliance whereby the pressure in the annular high pressure chamber is varied in accordance with movement of said punch to thereby control the quality of the drawn blanks.

4,357,817

PROCESS AND TOOL FOR DEBURRING FLAME-CUT SHEET METAL ELEMENTS

Ernst Linsinger, A-4662 Steyrermühl, Austria

Filed Jun. 9, 1980, Ser. No. 157,319

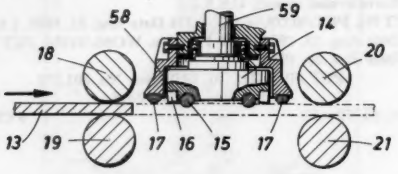
Claims priority, application Austria, Jun. 26, 1979, 4454/79

Int. Cl.³ B21D *31/06*

U.S. Cl. 72—71 **13 Claims**

1. In a process of deburring flame-cut sheet metal elements having a surface which lies substantially in a plane and having

edge portions which are formed with sharp-edged metallic burrs extending generally in said plane and carry slag beads which protrude from said surface, wherein tool means are caused to perform a gyratory motion parallel to said plane and while performing said motion are engaged with said slag beads to break them off,



the improvement residing in that

said tool means are caused simultaneously to engage and impact-deform said metallic burrs while performing a gyratory motion parallel to said plane.

4,357,818

METHOD OF SHAPING METAL

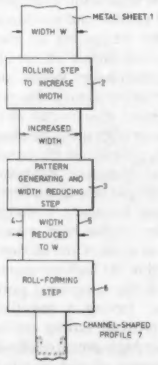
Robert C. Lyon, Wigan; Alan J. Booton, Farnham, and Francis A. Kerfoot, St. Helens, all of England, assignors to BICC Limited, London, England

Filed Oct. 27, 1980, Ser. No. 201,079

Claims priority, application United Kingdom, Nov. 2, 1979, 7938050; Apr. 1, 1980, 8010903

Int. Cl.³ B21D *5/14*

U.S. Cl. 72—177 **8 Claims**



1. A method of shaping metal in the form of an elongate sheet with parallel longitudinal edges to make from said metal sheet a formed profile that is of uniform cross-section except that at least one of said longitudinal edges is worked to generate a repeating pattern along its length comprising cold working the metal sheet by the successive steps of:

(a) rolling to increase the width of the metal sheet;

(b) with knurling wheel means (i) generating the said repeating pattern in said one longitudinal edge of the metal sheet and (ii) at the same time reducing the width of the metal sheet to substantially its original value; and

(c) roll-forming to the said profile.

4,357,819

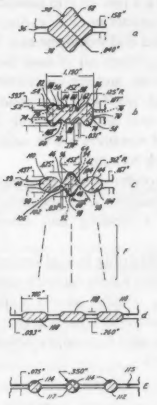
METHOD AND APPARATUS FOR SIMULTANEOUSLY FORMING THREE UNIFORM METAL ROUNDS

Dayton W. Elley, Seguin, Tex., assignor to Structural Metals, Inc., Seguin, Tex.

Filed Jun. 11, 1980, Ser. No. 158,470

Int. Cl.³ B21B *1/00, 1/18*

U.S. Cl. 72—204 **8 Claims**



6. Apparatus for simultaneously forming three metal rounds, comprising:

a pair of preliminary rollers;

each of said preliminary rollers having identical cylindrical surfaces with serially adjacent first, second and third grooves formed therein perpendicular to the longitudinal axis of said preliminary rollers;

said first and third grooves being approximately an elliptical arc having a radius of curvature measured about the major axis of approximately 0.125 inches, a maximum width of approximately 0.369 inches and a maximum depth of approximately 0.203 inches; and

said second groove being generally a truncated V-shape, having a greatest width of approximately 0.452 inches, a depth of approximately 0.100 inches and a narrowest width of approximately 0.270 inches.

4,357,820

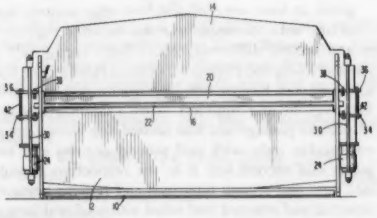
SAFETY CONTROL SYSTEM FOR METAL FORMING MACHINE

Gary N. Blanchard, Pocatello, Id., assignor to Bangor Punta Corporation, Greenwich, Conn.

Filed Jan. 21, 1980, Ser. No. 113,851

Int. Cl.³ B21D *55/00*

U.S. Cl. 72—389 **5 Claims**



1. Apparatus for forming material comprising:

a frame,

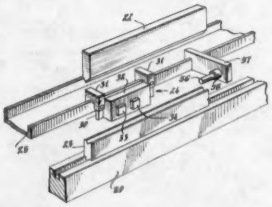
a bed carried by said frame,
a first die carried by said bed,
a head carried by said frame,
a second die carried by said head,
a fluid actuated cylinder connected between said head on the one hand and said frame on the other hand for relatively moving said bed and said head toward and away from one another between a first position with said dies spaced one from the other for receiving material to be formed therebetween and a second position with said dies in close proximity one to the other with the material formed therebetween,
a source of fluid under pressure, means for selectively supplying fluid under pressure from said source to said cylinder,
a sump,
means for sensing an obstruction between said dies other than the material to be formed and providing a signal in response thereto, and
means responsive to said signal and arranged in controlling relation to said moving means and including a valve operable to selectively divert fluid under pressure from said source to said sump in response to said signal thereby disabling said cylinder from moving said dies toward said second position when an obstruction is disposed between said dies.

4,357,821

GAUGE AND WORKPIECE HOLDER FOR A FORMING MACHINE

Joseph M. Fowler, 334 Westover Rd., Stamford, Conn. 06902

Filed Aug. 11, 1980, Ser. No. 176,903
Int. Cl.³ B21D *11/22*
U.S. Cl. 72—389 **11 Claims**



1. In a forming machine for forming an element of conductive material and having gauge means spaced from a forming area: the improvement wherein said gauge means comprises a pair of electrical contacts, said contacts being positioned to be engaged by said element when said element is in a forming position, and circuit means connected to said contacts for indicating the positioning of said element when it engages said contacts.

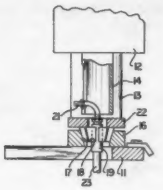
4,357,822

CRIMPING COLLET

Hiralal V. Patel, Mentor, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Sep. 29, 1980, Ser. No. 191,955
Int. Cl.³ B21D *41/00*
U.S. Cl. 72—402 **8 Claims**

1. A crimping apparatus comprising a die having a tapered bore and a collet assembly operable to crimp a workpiece when moved axially alond said tapered bore, said collet assembly including a plurality of rigid jaw elements and a separately formed elastomeric cage encircling and releasably receiving each of said jaw elements in said assembly, each of said jaw elements having recess means located at opposite axially inner and outer ends, said cage having mating axially inner and outer peripherally extending portions in said recess means which interlock said cage and each of said jaw elements together, said cage also providing separator portions between each pair of adjacent jaw elements, said separator portions extending axially between and joining said axially inner and outer peripher-



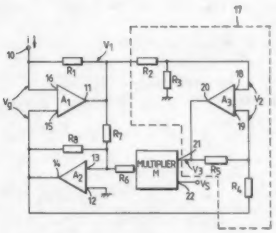
ally extending portions, said cage when unstressed maintaining a predetermined spacing between adjacent jaws and allowing radially inward movement when said collet is pressed into said tapered bore.

4,357,823

STRAIN GAUGE SIMULATOR

Alan H. Lock, Allestree, England, assignor to Rolls-Royce Limited, London, England

Filed Apr. 1, 1981, Ser. No. 249,979
Claims priority, application United Kingdom, Jun. 19, 1980, 8020135
Int. Cl.³ G01L *25/00*
U.S. Cl. 73—1 B **4 Claims**



1. An electrical circuit so adapted that for the application of a given polarizing current thereto, the electrical output thereof is equivalent to the electrical output of a given strain gauge to which the same polarizing current has been applied, said circuit comprising means adapted to provide an electrical output equivalent to that of said strain gauge in a non-deformed condition, means adapted to provide an electrical output equivalent to the difference between the electrical outputs of said strain gauge in deformed and non-deformed conditions and means adapted to combine said electrical outputs to provide a single electrical output equivalent to that of said strain gauge.

4,357,824

METHOD FOR DETERMINING VOLATILIZATION RATES OF DISSOLVED VOLATILES FROM SOLID WASTE MATERIALS

Stephen D. Foss, and Sheng H. Lin, both of Pittsfield, Mass., assignors to General Electric Company, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,323
Int. Cl.³ G01N *7/16*
U.S. Cl. 73—19 **2 Claims**

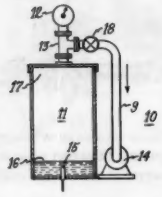
1. A method for determining the volatilization rate of dissolved contaminants in a solid substance comprising the steps of:

placing a solid substance sample in an evacuation chamber;
evacuating said chamber by pumping;

determining the dynamic pressure within the chamber as a function of time while pumping until said dynamic pressure reaches a substantially constant value;

periodically halting the pumping and allowing the pressure within the chamber to come to an equilibrium pressure;

establishing a relationship between said dynamic pressure and said equilibrium pressure; and



monitoring the temperature of the solid substance as a function of time;

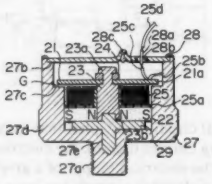
whereby to provide data for determining the mass transfer coefficient and volatilization rate for dissolved gaseous contaminants in the solid substance.

4,357,825

KNOCK DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Ootsuka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 10, 1980, Ser. No. 168,447
Claims priority, application Japan, Jul. 16, 1979, 54/90858
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **7 Claims**



1. A knock detecting apparatus for internal combustion engines comprising:

housing means made of a magnetic material and formed into substantially a cylindrical shape;

magnetic path means including a central magnetic path portion disposed substantially centrally in said housing means to extend in the longitudinal direction thereof, a plurality of vibrating reeds made of a magnetic material and attached to and extending radially outward from said central portion, and a diametrical magnetic path portion disposed to extend from said central magnetic path portion in the diametrical direction of said housing means at a predetermined distance from said vibrating means, said side peripheral wall of said housing means forming an outer peripheral magnetic path portion disposed to extend from an outer peripheral side of said diametrical magnetic path portion toward ends of said reeds opposite said central portion so as to form gaps therebetween; and

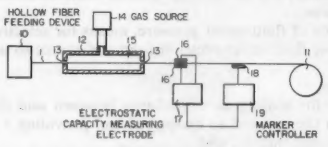
magnetic flux sensing means disposed in said housing means to sense a change in the magnetic flux passing through said magnetic path means.

4,357,826

METHOD OF DETECTING PINHOLES IN HOLLOW FIBERS

Yasuteru Tahara, and Kazuyoshi Koike, both of Otake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Jun. 25, 1980, Ser. No. 163,011
Claims priority, application Japan, Jul. 2, 1979, 54/83737
Int. Cl.³ G01N *21/89*; G01M *3/38*
U.S. Cl. 73—37.7 **10 Claims**



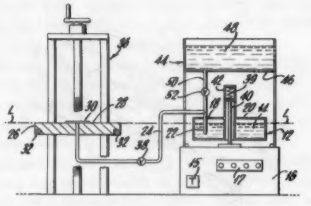
1. A method of detecting pinholes in hollow fibers wherein a fiber is filled with liquid, the filled fiber is fed to a zone containing a gas outside the fiber which gas has a pressure greater than the pressure of liquid within the fiber whereby a bubble is formed inside the fiber at a pinhole and the fiber is thereafter fed to a bubble detector.

4,357,827

GRAVIMETRIC ABSORBENCY TESTER

Wesley J. McConnell, Wallingford, Pa., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed May 12, 1980, Ser. No. 149,214
Int. Cl.³ G01N *5/02*
U.S. Cl. 73—73 **1 Claim**



1. An apparatus which comprises:

(a) a closed vessel for containing liquid;

(b) a weighing means for sensing change in weight of liquid contained in said vessel and further supporting said vessel;

(c) an indicating means for indicating the weight sensed by said weighing means;

(d) a test surface to receive a specimen to be tested said test surface being part of an interchangeable test cell;

(e) a conduit means opertively connecting said vessel to said test cell for directing a flow of liquid between said vessel and said test cell;

(f) a mechanical means for vertically positioning said test cell, said mechanical means including a support for said test cell and further provided with a means to rotatively adjust the test cell to any desired angle between 0° and 90°;

(g) a means to maintain the surface of liquid contained in said vessel at a substantially constant elevation as liquid flows out of or into said vessel, said maintaining means being a leveling spring mounted on a pin and fitted in a mounting tube positioned in the center of said vessel, said pin further comprising means by which the vessel is mounted on the weighing means,

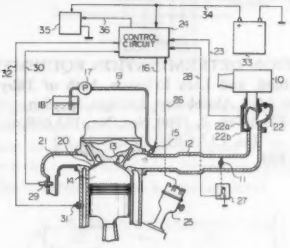
whereby the weight of liquid flowing from said vessel to said test cell or from said test cell to said vessel, can be determined.

4,357,828

METHOD OF INDICATING A BASIC AIR-FUEL RATIO CONDITION OF AN INTERNAL COMBUSTION ENGINE

Jiro Nakano, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 2, 1980, Ser. No. 183,417
Claims priority, application Japan, Sep. 4, 1979, 54-112384
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 8 Claims



1. A method of indicating a basic air-fuel ratio condition of an internal combustion engine having an air-fuel ratio feedback control system which controls, in response to an air-fuel ratio correction signal, the air-fuel ratio of the mixture supplied to said engine, said air-fuel ratio correction signal being gradually increased or decreased in accordance with the output of an exhaust gas sensor which detects the concentration of a predetermined component contained in the exhaust gas of said engine, said method comprising the steps of:

generating a signal having an average value of said air-fuel ratio correction signal;

comparing said average air-fuel ratio correction signal with a plurality of predetermined values to discriminate a range in which said average signal is positioned among a plurality of ranges specified by said plurality of predetermined values; and

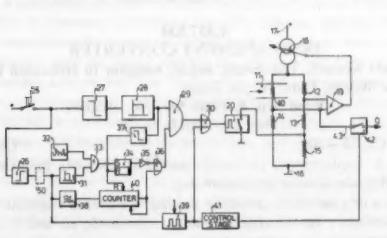
producing an output signal which represents said discriminated range and energizes an indicator to inform an operator of the basic air-fuel ratio condition of said engine.

4,357,829

APPARATUS FOR TEMPERATURE CONTROL OF A RESISTOR USED FOR MEASUREMENT PURPOSES, ESPECIALLY IN INTERNAL COMBUSTION ENGINES

Bernd Kraus, Gerlingen, and Otto Glöckler, Renningen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 26, 1979, Ser. No. 97,245
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1979, 2900690
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 11 Claims



1. An apparatus for controlling the temperature of a resistor associated with a drive system and used for measurement purposes during operation of the system, which comprises:

current supply means for supplying current to said resistor;

current regulating means for regulating the flow of current through said resistor during the measurement;

current increasing means for increasing the flow of current through said resistor in dependence on at least one system condition including at least one system operating condition; and

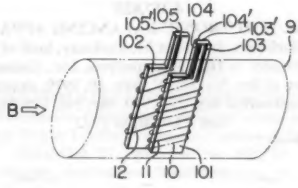
current control means for controlling the magnitude and duration of the current increase by said current increasing means to achieve a desired "burn-off" of deposits on the surface of said resistor.

4,357,830

GAS FLOW MEASURING APPARATUS

Tokio Kohama, Nishio; Hisasi Kawai, Toyohashi; Hideki Obayashi, Okazaki, and Tsuneyuki Egami, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 17, 1980, Ser. No. 188,021
Claims priority, application Japan, Sep. 21, 1979, 54-122363; Mar. 21, 1980, 55-36615
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 7 Claims



1. A gas flow measuring apparatus comprising:

a flow measuring tube disposed such that a gas to be measured flows therethrough;

a resistance wire forming an electric heater and wound on a first support made from an electrical insulating material;

a first temperature dependent resistance wire wound on said first support alternately and closely with said electric heater resistance wire so as not to establish a short-circuit therebetween;

a second temperature dependent resistance wire positioned in said flow measuring tube so as to be not easily subjected to the effect of heat generated by said electric heater, said second temperature dependent resistance wire being wound on a second support made from an electrical insulating material; and

wherein each of said first and second supports is formed into a plate shape having at least one opening therethrough; and

a measuring circuit having a reference resistor circuit forming, with said first and second temperature dependent resistance wires, a bridge, said measuring circuit being disposed to apply a voltage to said bridge and said electric heater resistance wire and measure the flow rate of said gas.

4,357,831

AMBIENT TEMPERATURE CORRECTION DEVICE FOR LIQUID EXPANSION THERMOMETERS

Pierre Biettron, Meslay, France, assignor to Societe de Fabrication des Appareils Bourdon, Paris, France

Filed Jun. 2, 1980, Ser. No. 155,759
Claims priority, application France, Jun. 1, 1979, 79 14117
Int. Cl.³ G01K *5/38*
U.S. Cl. 374—197 11 Claims

1. In a liquid filled liquid expansion thermometer which

includes a bulb for placement in the medium whose temperature is to be measured, a means for providing a temperature reading and a duct connected between the bulb and the means for providing a temperature reading, the improvement wherein said duct includes a number of temperature compensation elements along its length so as to divide the duct into a number of duct sections, each temperature compensation element being associated with a duct section, each temperature compensation

element comprising a hollow shell and a solid element therein, each hollow shell defining a greater volume than the volume of the associated duct section and each solid element defining a smaller volume than the volume of the associated hollow shell, the free volume for liquid defined between each hollow shell and the solid element therein changing with temperature equally to the change in volume of the associated duct section and the volume of liquid therein.

4,357,832

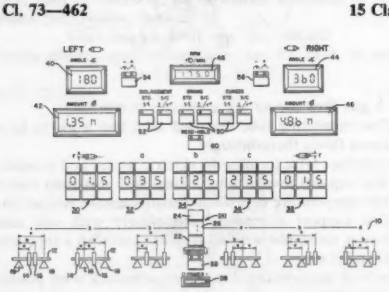
DIGITAL ELECTRONIC BALANCING APPARATUS

Bobby J. Blackburn, and John M. Csokmay, both of Columbus, Ohio, assignors to IRD Mechanalysis, Inc., Columbus, Ohio

Continuation of Ser. No. 31,702, Apr. 20, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,904

Int. Cl.³ G01M *1/22*

U.S. Cl. 73—462 **15 Claims**



1. In electronic balancing apparatus for carrying out the balancing analysis of a rotatable body in conjunction with the rotation thereof at a given rate upon a support structure having calibration vibrator means associated therewith energizable to impart an oscillation of predetermined dynamic characteristic to said body at predetermined positions with respect to said support structure and having transducer means associated with said support structure for deriving vibration responsive signals, the improvement characterized by:

rotation monitoring means spaced from said body and having a pulse characterized output corresponding with the rotation of a given position on said body;

counter means having a predetermined digital characterized output in response to said pulse characterized output;

first and second memory means respectively retaining sine and cosine data and addressable by said counter means digital characterized output to derive respective first and second digital characterized trigonometric outputs;

first converter means responsive to said first and second trigonometric outputs for deriving first and second analog reference outputs respectively corresponding therewith;

multiplier means responsive to said vibration signals and said first and second reference outputs for deriving first and second phase related signals;

second converter means for converting said first and second phase related signals respectively to first and second digital signals;

processor means responsive to said first and second digital signals for computing vector categorized balance deriving weight and position data and providing readout signals corresponding therewith;

and

readout means responsive to said readout signals for providing visual digital readouts representing balance deriving weight and position information.

4,357,833

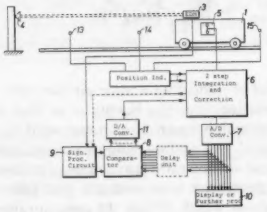
POSITION DETERMINATION EQUIPMENT

Klas R. Wiklund, and Lars Ericsson, both of Täby, Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Sep. 2, 1980, Ser. No. 183,669

Int. Cl.³ G01C *22/02, 23/00*

U.S. Cl. 73—490 **2 Claims**



1. An apparatus for accurately determining the position of an object which is moving along an axis with respect to a fixed reference on the axis without making mechanical contact with the object, comprising first position determination means which can only be operated at relatively long intervals of time for determining the absolute position of said object with respect to said reference at said relatively long intervals of time, said position determination means including means mounted on said object for cooperating with means at said reference to provide said position determination, second position determination means associated with said object for determining the instantaneous position of said object along said axis at relatively frequent intervals of time, said second position determination means including differential position determining means comprising either the combination of speedometer means and electronic integration means for time integrating the output of said speedometer means at relatively frequent time intervals of the combination of accellerometer means and electronic integration means for double time integrating the output of said accellerometer means at relatively frequent intervals of time, and means for correcting the value of said instantaneous measurement signal at said relatively long intervals of time to be equal to said position determination made by said first position determination means.

4,357,834

DISPLACEMENT CONVERTER

Atsushi Kimura, Yokohama, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,631

Int. Cl.³ G01L *19/04*

U.S. Cl. 73—708 **7 Claims**

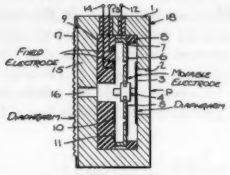
1. A displacement converter useful in pressure gauges and the like, the converter comprising:

A. a displacement detector having a variable capacitor responsive to the displacement to be metered and a fixed capacitor insensitive thereto;

B. an amplitude-controllable oscillator whose AC output is applied to both the variable and fixed capacitor;

C. means coupled to the variable and fixed capacitors to derive therefrom first and second electrical signals which are a function of their respective capacitance values;

D. a control circuit responsive to the first and second electrical signals to produce a control signal which depends on the difference therebetween; and



E. means to apply said control signal to the oscillator to govern the output amplitude thereof in a manner maintaining the control signal at a constant level.

4,357,835

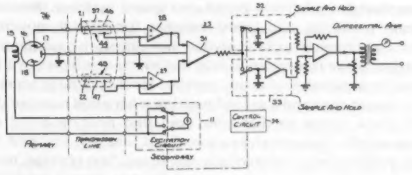
ELECTROMAGNETIC FLOWMETER IN SHIELDED LINES

Nagaoki Kayama, Tokyo, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,430

Int. Cl.³ G01F *1/60*

U.S. Cl. 73—861.17 **7 Claims**



1. An electromagnetic flowmeter of high accuracy comprising:

A. a primary including a flow tube through which the fluid being metered is conducted to intercept a magnetic field established by an electromagnet having a coil to induce a voltage therein which is transferred to a pair of electrodes mounted at diametrically-opposed positions on the tube, said coil being excited by a rectangular wave whose frequency is low relative to the frequency of a standard A-C power line;

B. a secondary coupled to said primary, said secondary including a pair of input amplifiers, each having an inverting input, a non inverting input and an output;

C. a transmission line to couple said primary to said secondary in a manner avoiding capacitive effects, said line being constituted by a pair of cables each having an inner conductor and an outer shield, the inner conductor of the cables connecting the electrodes of the primary to the respective non-inverting inputs of the amplifiers, the outer shields thereof being connected to the respective inverting inputs and outputs of the amplifiers, and a common shield surrounding said cables, and

D. a differential amplifier coupled to the outputs of said pair of amplifiers to provide a differential output which is alternately applied by signal switching means to first and second sample-and-hold circuits during intervals when the magnetic flux in said tube is in its steady-state condition.

4,357,836

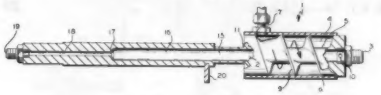
SAMPLE INJECTION SYSTEM FOR CHEMICAL ANALYZER AND METHOD OF SAMPLE ANALYSIS

Fritz C. Kokesh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 19, 1980, Ser. No. 218,231

Int. Cl.³ G01N *35/00*

U.S. Cl. 73—863.11 **42 Claims**



1. A sample receptacle for an analytical instrument comprising:

a sample chamber having a sample inlet for receiving a solid sample and an opposing sample outlet for removal of a solid sample;

means for cooling the sample chamber; and

means for introducing a carrier gas into the sample chamber.

4,357,837

DYNAMICALLY TUNED GYROSCOPES

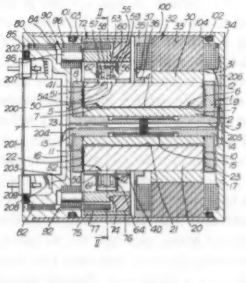
Geoffrey Beardmore, Cheltenham, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Oct. 27, 1980, Ser. No. 200,793

Claims priority, application United Kingdom, Nov. 16, 1979, 7939726

Int. Cl.³ G01C *19/08, 19/22*

U.S. Cl. 74—5 F **12 Claims**

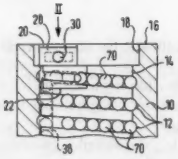


1. Gyroscope apparatus comprising: a rotatable member; first and second bearing means supporting the rotatable member from within at opposite ends thereof for rotation about its axis of rotation; first resilient means mounted with said rotatable member at a first point along its length intermediate said ends; gimbal means extending about said rotatable member, said gimbal means being mounted with said resilient means for angular displacement relative to said rotatable member about a first axis at right angles to the axis of rotation of the rotatable member; second resilient means mounted with said gimbal means; an inertia member mounted with said second resilient means for angular displacement relative to said gimbal means about a second axis at right angles to said first axis; drive means for rotating said rotatable member about its axis of rotation; and means mounting said drive means with said rotatable member at a second point along its length intermediate said first point and one of said bearing means.

4,357,838
BALL SCREW AND NUT DRIVE DEVICE

Günther Blaurock, Niederwerrn; Ernst Albert, Sand, and Horst Altrock, Dittelbrunn, all of Fed. Rep. of Germany, assignors to Deutsche Star Kugelhalter GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 136,781
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914756
Int. Cl.³ F16H *25/22*
U.S. Cl. 74—424.8 R 29 Claims

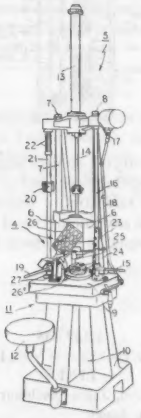


1. Ball spindle and nut drive device comprising an axially extending spindle having a circumferentially extending outside surface, an axially extending nut body laterally enclosing at least a portion of the axially extending outside surface of said spindle, said nut body having an axially and circumferentially extending inside surface spaced outwardly from the outside surface of said spindle and an axially extending outside surface spaced outwardly from said inside surface, said nut body having an end face at each of the opposite ends thereof extending transversely of the axial direction of said nut body, the inside surface of said nut body having a helically extending groove therein, the outer surface of said spindle in combination with the helically extending groove in the inside surface of said nut body forming a helical ball channel, a plurality of balls for circulation through said helical ball channel, said nut body having an axially extending ball return channel speed outwardly from the inside surface of said nut body for passing said balls between the opposite ends of said helical ball channel, said nut body having a first recess extending axially from each of said end faces and formed in the inside surface of said nut body and each said first recess extending in the axial direction from said end face to at least the region of said helically extending groove with said first recess being open through said inside surface of said nut body, said first recess having a first surface, a deflecting member inserted into said first recess, said deflecting member having a deflecting channel therein and a deflecting projection extending from said deflecting channel tangentially into said helical ball channel for lifting said balls circulating through said ball channel into said deflecting channel, said deflecting channel having a rectilinear portion extending tangentially of said ball channel and a curvilinear portion at the end of said rectilinear portion spaced outwardly from said ball channel with said curvilinear portion extending into said ball return channel, wherein the improvement comprises that said deflecting channel being open for a portion of the circumferential surface along the length thereof on the side of said deflecting channel opposite said projection, and in the open portion of said deflecting channel said balls moving therethrough contact the first surface of said first recess, the first surface of said first recess being located in a plane parallel with the axis of said nut body and the first surface extending tangentially of and outwardly from the base of said helically extending groove in said nut body.

4,357,839
MACHINE SAFETY GUARD

John S. Krejmas, Greenfield, Mass., assignor to Rogers, Lunt & Bowlen Company, Greenfield, Mass.

Filed Jun. 26, 1980, Ser. No. 163,080
Int. Cl.³ F16P *3/04, 3/24*
U.S. Cl. 74—615 5 Claims



1. A safety guard for mechanically blocking a machine danger zone in response to operator actuation of a control lever of the machine, said control lever being disposed for operator actuation angularly about a substantially vertical axis, comprising a relatively broad-area guard member, mounting means mounting said guard member for pivotal movement about a horizontal axis for pivotal movements in a substantially vertical plane transverse to said horizontal axis between a first position at which said guard member blocks operator access to the danger zone and a second position where said member does not block access to that zone, said first position being at a substantially horizontal location about said axis and said second position being substantially above said first position, means mechanically coupling the control lever in driving relation to said mounting means which translates operator-induced movement of said lever from a first setting to a second setting into related pivotal movement of said guard member from said second position to said first position, respectively, and including a crank arm angularly movable about said vertical axis with said control lever and a longitudinally-reciprocatable member coupled at one end with said crank arm and another end in a torque-applying relationship with said mounting means about said horizontal axis, and a counterweight fixed with said mounting means on a side of said axis opposite to that on which said guard member is mounted and in substantially a counterbalancing relationship thereto, said lever allowing operation of the machine when in said second setting and said coupling means forcing said guard member substantially into said first position before said lever reaches said second setting in the movement from said first setting.

4,357,840
MULTI-SPEED PLANETARY DIFFERENTIAL

James E. Winzeler, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

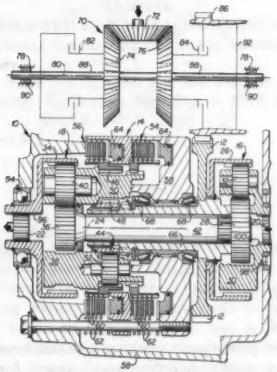
PCT No. PCT/US80/00347, § 371 Date Mar. 31, 1980, § 102(e) Date Mar. 31, 1980, PCT Pub. No. WO81/02921, PCT Pub. Date Oct. 15, 1981
PCT Filed Mar. 31, 1980, Ser. No. 196,793
Int. Cl.³ F16H *37/08, 1/42, 57/10*
U.S. Cl. 74—682 58 Claims

1. In a planetary differential (10) having first and second

planetary sets (**16,18**) individually having ring, sun and carrier elements (**26,28,30,34,36,38**), first and second output members (**20,22**) individually connected to one of said ring and carrier elements (**26,30,34,38**) of the first and second planetary sets (**16,18**), and a rotary input member (**12**), the improvement comprising:

the sun elements (**28,36**) of the first and second planetary sets (**16,18**) being connected together for joint rotation; and

means (**14'**) for driving said output members (**20,22**) at substantially equal levels of torque in a plurality of reduced speeds, said means (**14'**) being driven by said rotary input member (**12**) and driving the remaining one of said ring



and carrier elements (**34,38**) of the second planetary set (**18**) in at least one of the plurality of speeds, the remaining one of said ring and carrier elements (**26,30**) of the first planetary set (**16**) being driven by one of said input member (**12**) and said means (**14'**), said means (**14'**) including a third planetary set (**44**) having ring, sun and carrier elements (**46,48,50**), said input member (**12**) being connected to said sun element (**48**) of the third planetary set (**44**) for joint rotation, said means (**14**) including clutch means (**102**) for connecting said sun element (**48**) and said carrier element (**50**) of the third planetary set (**44**) for joint rotation.

4,357,841

AUTOMATIC GRINDING ATTACHMENT FOR SAW GRINDERS

Terry A. Mote, 8417 Little Rd., Bloomington, Minn. 55437

Filed May 19, 1980, Ser. No. 150,738
Int. Cl.³ B23D *63/12*
U.S. Cl. 76—41 **24 Claims**

1. An apparatus for automatically grinding circular saw blades, comprising

(a) a table

(b) a pedestal attached to said table for holding said saw blade in horizontal position;

(c) a carriage assembly including a saw grinding wheel, said assembly attached to said table and movably slideable to bring said grinding wheel in and out of grinding contact with said saw blade;

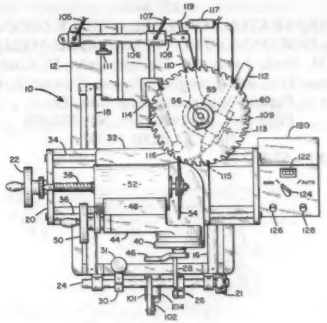
(d) an electromagnet positioned to contact said saw blade

(e) first linear motion means connected between said table and said carriage assembly for movably sliding said carriage assembly;

(f) second linear motion means connected between said table and said saw blade for incrementally rotating said saw blade on said pedestal;

(g) a first limit switch for detecting a predetermined motion of said second linear motion means, and thereby activating said first linear motion means and simultaneously energizing said electromagnet;

(h) a second limit switch for detecting a predetermined motion of said first linear motion means, and thereby



activating said second linear motion means and simultaneously deenergizing said electromagnet; and

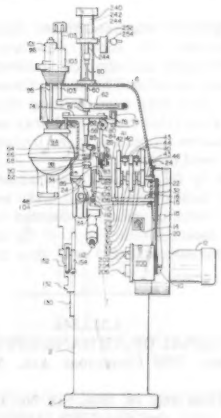
(i) means for disabling said first and second linear motion means after a predetermined number of activations of each.

4,357,842

APPARATUS FOR SHARPENING A COMBINATION SAW BLADE

James A. Adams, 5 Brightside Ave., and Paul P. Ravinski, Grove St., both of Kingston, Mass. 02364

Filed Jan. 7, 1981, Ser. No. 223,128
Int. Cl.³ B23D *63/14*
U.S. Cl. 76—41 **3 Claims**



1. Apparatus for sharpening a combination saw blade, the apparatus including a selector means for manual input of numbers of cutting teeth and non-cutting tooth spaces on the saw blade, a counter means for counting the number of teeth and tooth spaces moved to a grinding station, said grinding station having a grinding head disposed therein and mounted on a first reciprocating lift mechanism activated by a cam to sharpen each of said blade teeth serially, and a second lift mechanism adapted to operate in response to a signal from said counter to locate said grinding head out of a grinding position when said grinding station is occupied by one of said non-cutting tooth

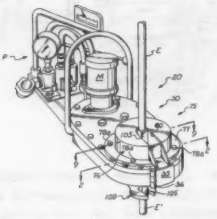
spaces, and to place the grinding head under control of the first lift mechanism when said grinding station is occupied by a cutting tooth.

4,357,843

TONG APPARATUS FOR THREADEDLY CONNECTING AND DISCONNECTING ELONGATED MEMBERS

Marvin H. Peck; Larry M. DeSmit; John D. Conlon, all of Houston, Tex., and Frank O. Bynum, Stonewall, Okla., assignors to Peck-O-Matic, Inc., Houston, Tex.

Filed Oct. 31, 1980, Ser. No. 202,596
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.16 **1 Claim**



1. In a tong apparatus for threadedly connecting and disconnecting a pair of members wherein cage support means are rotatably carried by a tong housing with jaw means which are pivotally mounted in cage means carried by the cage support means to grip one of the pair of members and rotate it upon rotation of the cage support means and backup means carried by the tong housing to hold the other of the pair of members so that connection and disconnection of the pair of members may be effected, the invention comprising restraining means mounted on the tong housing above the cage means to restrain relative rotation between the cage means and the cage support means upon initial rotation of the cage support means including:

a. drag band housing means secured on the tong housing above said cage means;

b. brake band means extending circumferentially of said drag band housing means, said brake band means being secured at one end to said drag band housing means and adjustably supported at its other end on said drag band housing means;

c. drag shoe means supported by and frictionally engaged with said brake band means;

d. an annular lip on said drag shoe means overhanging said brake band means to retain said brake band, drag shoe and drag band housing means connected together when the restraining means is removed from the tong housing; and

e. means interconnecting said drag shoe means and the cage means.

4,357,844

UNIDIRECTIONAL DRIVE HAND OPERATED WRENCH

Harold Welbon, 7980 Clovernook Ave., Mt. Healthy, Ohio 45231

Filed Aug. 18, 1980, Ser. No. 178,726
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—57.39 **9 Claims**

1. A unidirectional drive hand operated wrench comprising:

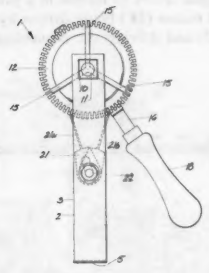
first and second pivotally connected angularly displaceable elongated handles;

a rotatable drive stud;

drive means connecting said handles to said drive stud such that manual angular displacement of said handles with respect to each other in either direction causes unidirectional rotation of said drive stud;

reversing means associated with said drive means for reversing the unidirectional rotation of said drive stud;

said first handle comprising a pair of spaced arms and said second handle including a gripping portion positionable between the spaced arms of said first handle when said handles are co-linear, said wrench further including a shaft rotatably supported between said arms, said second handle including a shaft-like driver member connected to said gripping portion and rotatably supported by said shaft, a first driver bevel gear rotatably mounted on said shaft between said drive member and one of said arms, a



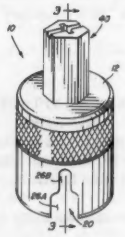
second driver bevel gear non-rotatably mounted on said shaft between said drive member and the other of said arms, said drive stud being connected to one of said gears for rotation therewith, a bevel pinion gear rotatably mounted on said driver member on either side of said shaft, said pinion gears meshing with said bevel gears, said reversing means including pawl means for permitting rotation of each of said bevel gears in only one direction.

4,357,845

APPARATUS FOR MANIPULATING WINGNUTS

Jared B. Cornia, 4065 E. University, Space #224, Mesa, Ariz. 85205

Filed Oct. 3, 1980, Ser. No. 193,806
Int. Cl.³ B25B *13/02*
U.S. Cl. 81—125 **2 Claims**



1. A universal wingnut wrench comprising:

a body member having grip means for engaging the ears of a wingnut;

magnet means for magnetically adhering said wingnut to said body member; and

drive means for permitting torque to be applied to said body member so that said wingnut can be rotated with said wrench,

said magnet means comprising:

said body member having opposed positive and negative magnetic pole regions;

said magnetic pole regions having symmetry about a longitudinal plane of said body member;

said body member having a concavity at a first end; and

said body member further comprising first and second and

magnetically impermeable regions interposed between said pole regions adjacent said first end,

said grip means comprising:

said body member having first and second pairs of diametrically opposed pairs of slots at said first end;

said body member having a first of each of said pairs of slots in said positive region adjacent a different one of said impermeable regions; and

said body member further having a second of each of said pairs of slots in said negative region adjacent a different one of said impermeable regions.

4,357,846
REAMER FOR HOLLOW SHAFTS

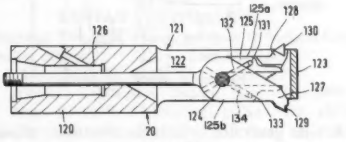
Luigi Primo, Genoa Sestri, Italy, assignor to Ansaldo Societa per Azioni, Italy

Filed Sep. 2, 1980, Ser. No. 183,150

Claims priority, application Italy, Sep. 3, 1979, 12721 A/79

Int. Cl.³ B23B *27/00, 3/26*

U.S. Cl. 82—1.5 **10 Claims**



1. A reamer for reaming a toric surface in the bore of a hollow shaft, which comprises a cylindrical casing insertable in said bore, means for centering said casing in said bore, a motor slidable axially in said bore and having a shaft coaxial with said bore, means for moving said motor axially of said casing, means for restraining said motor against rotation, a drive shaft rotatable coaxially in said casing and fixed to said motor shaft for rotation by said motor and for movement axially of said casing by axial movement of said motor, a cylindrical reaming head at an end of said casing, said reaming head being fixed axially relative to said casing but rotatable relative thereto by said drive shaft and having a diametrically extending recess, a mounting and actuating member fixed on an end of said drive shaft and disposed in said recess of said reaming head, said mounting and actuating member being rotatable with said reaming head and movable axially of said reaming head by axial movement of said motor and drive shaft relative to said casing, at least one tool holder received in said recess of said reaming head in juxtaposition to said mounting and actuating member, and a cutting tool carried by said tool holder, and cam means actuated by axial movement of said drive shaft and mounting and actuating member relative to said reaming head for moving said tool holder in said recess to move said tool along a path to cut a toric surface in said bore as said reaming head rotates while remaining fixed in an axial direction relative to said bore.

4,357,847
MULTIPLE-BLADE SYSTEM AS A TURNING TOOL FOR THE CUTTING MACHINING OF WORKPIECES

Klaus H. Kemmer, Am Gansberg 31, 7277 Wildberg 4, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,516

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 7920363[U]; Oct. 6, 1979, 2940549

Int. Cl.³ B26D *1/04, 3/02*

U.S. Cl. 82—36 R **8 Claims**

1. A turning tool for the cutting machining of workpieces and of the type to be mounted in a tool holder, comprising:

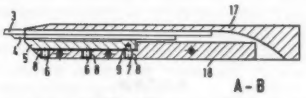
a hollow sleeve of substantially rectangular cross-section and having oppositely disposed walls and opposite end portions;

a clamping jaw releasably fitted in at least one of said end portions of said sleeve;

a first cutting blade clamped between said releasably fitted jaw and one of said opposite walls;

adjustable clamping screw means, threaded in threaded bores in the other of said opposite walls, for engaging said clamping jaw and causing the jaw to press said blade against said one wall; and

at least a second cutting blade, which forms with said first blade a plurality of blades forming the actual tool, the cutting edges of said blades being displaced relative to



each other by a predetermined amount so that the more forwardly projecting blade serves as a parting blade and the more inwardly disposed blade serves as a chamfering blade;

the blades being of approximately trapezoidal cross-section so that the contact surface of one of the blades lies against the clamping jaw parallel to the longitudinal axis of the sleeve;

the cross-section of the chamfering blade being narrower at the cutting side than at the opposite side and extending parallel thereto.

4,357,848
METHOD AND APPARATUS FOR CONTROLLING THE FEEDING OF A BANDSAW BLADE OF HORIZONTAL BANDSAW MACHINES

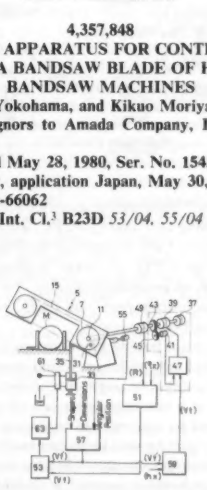
Nobuo Sakurai, Yokohama, and Kikuo Moriya, Machida, both of Japan, assignors to Amada Company, Limited, Isehara, Japan

Filed May 28, 1980, Ser. No. 154,108

Claims priority, application Japan, May 30, 1979, 54-66061; May 30, 1979, 54-66062

Int. Cl.³ B23D *53/04, 55/04*

U.S. Cl. 83—801 **4 Claims**



1. An apparatus for controlling the feeding of a band saw blade of a horizontal band saw machine in order to maintain a constant cutting rate, said apparatus comprising:

feed speed computing means arranged to generate feeding signals;

blade speed computing means arranged to generate driving signals;

means for detecting the cutting resistance of a material being cut;

driving speed controlling means connected to said blade speed computing means for controlling the driving speed of said band saw in response to said driving signals so as to provide a constant cutting power by maintaining a constant ratio of cutting resistance to driving speed, said

driving signals being related to the ratio of feeding speed to driving speed; and

feed speed controlling means for controlling the feeding speed of said band saw in response to said feeding signals in order to maintain a constant cutting rate.

4,357,849

KEY SWITCH INFORMATION ASSIGNOR

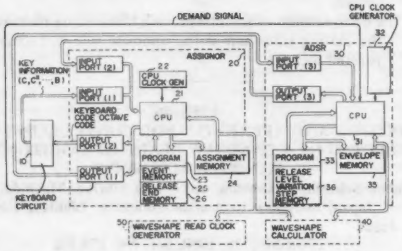
Sadaaki Ezawa, and Tsutomu Saito, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Dec. 17, 1979, Ser. No. 104,743

Claims priority, application Japan, Dec. 18, 1978, 54-158884

Int. Cl.³ G10H *1/057, 1/18*

U.S. Cl. 84—1.01 **6 Claims**



1. A key switch information assignor comprising:

a data processing unit having a CPU, a CPU clock generator for driving the CPU, a memory for loading a program for operating the CPU, an event memory for storing key information, an assignment memory for storing key codes, and an input/output port, said CPU producing successive keyboard and octave codes,

a keyboard circuit having keyboard switches, said switches being divided into different sound ranges, corresponding keyboard switches of respective sound ranges being interconnected at a common input end coupled to said input-/output port to receive said keyboard and octave codes for thereby polling said keyboard switches, and interconnected at their output ends whereby switches corresponding to common notes produce a multiplexed signal of key information, said key information being coupled to the input/output port of said data processing unit, said data processing unit having means for comparing said key information with the content of the event memory which stores therein the key information from a previous polling of said keyboard switches, said data processing unit having means for producing a note code only in response to an event which results from a change in the bit position between the previous key information and the new key information and forming a key code therefrom by combining the note code produced together with the particular keyboard code and octave code sent to the keyboard circuit which produced that key information, said key code being written into said assignment memory for further transfer.

4,357,850

TONE GENERATOR SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENTS

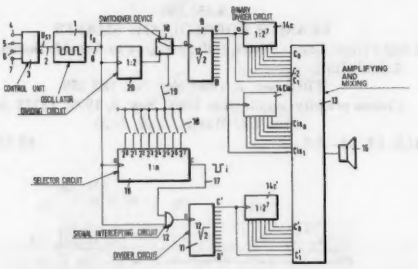
Reinhard Franz, Tulpenstrasse 15, D-5401 Emmelshausen, and Wilfried Dittmar, Feldstrasse 18, D-5401 Halsenbach, both of Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,694

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002095

Int. Cl.³ G10H *1/02, 5/07*

U.S. Cl. 84—1.01 **13 Claims**



1. A tone generator system for electronic musical instruments comprising:

(a) a plurality of dividing circuits arranged to transmit tone signals;

(b) a generator for generating signals at a predetermined frequency;

(c) first coupling means coupling said generator to one of said dividing circuits, said first coupling means including an auxiliary divider, and a switch for selectively coupling said generator to said one dividing circuit via a path through said auxiliary divider and a path which is clear of said auxiliary divider between said generator and said one dividing circuit; and

(d) second coupling means coupling said generator to another of said dividing circuits, said second coupling means including a signal intercepting circuit, and an adjustable selector circuit operative to cause interception of a signal by said intercepting circuit in response to receipt of a predetermined number of signals from said generator.

4,357,851

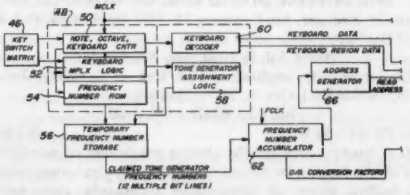
METHOD AND APPARATUS FOR PRODUCING MIXTURE TONES IN AN ELECTRONIC MUSICAL INSTRUMENT

Jerome Markowitz, Allentown, and Thomas M. Schenck, Pottsville, both of Pa., assignors to Allen Organ Company, Macungie, Pa.

Filed Mar. 11, 1981, Ser. No. 242,754

Int. Cl.³ G10H *1/08, 1/18, 7/00*

U.S. Cl. 84—1.01 **24 Claims**



1. Method for producing a mixture tone in a keyboard elec-

tronic musical instrument of the type wherein musical tones are produced by reading out of memory stored sample points of a complex wave form, the sample points being read from memory at a rate corresponding to a frequency number associated with an active key of the keyboard, comprising the steps of:

(a) providing a keyboard having a selected number of keyboard regions such that each region comprises two or more contiguous keys;

(b) weighting the frequency numbers associated with the respective keys by a preselected factor for each keyboard region, the factor for each successive region along the keyboard, proceeding from the lower end of the musical scale to the upper end, being the same as or lower than the factor for the immediately preceding region;

(c) storing in memory a complex mixture wave form which is a composite of two or more selected wave forms; and

(d) reading out of memory said stored complex mixture wave form at a rate corresponding to the weighted frequency number associated with an active key.

4,357,852
GUITAR SYNTHESIZER

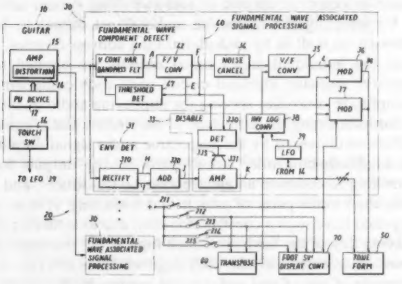
Noboru Suenaga, Fukuoka, Japan, assignor to Roland Corporation, Osaka, Japan

Filed May 15, 1980, Ser. No. 150,074

Claims priority, application Japan, May 21, 1979, 54-68501[U]; Nov. 9, 1979, 54-156058[U]; Nov. 24, 1979, 54-162960[U]; Nov. 24, 1979, 54-162961[U]; Dec. 11, 1979, 54-171728[U]; Dec. 11, 1979, 54-171729[U]; Dec. 21, 1979, 54-178071[U]; Jan. 9, 1980, 55-1397[U]

Int. Cl.³ G10H *3/00*

U.S. Cl. 84—1.16 **33 Claims**



1. A guitar synthesizer, comprising: a guitar portion (**10**) including strings stretched between a bridge and a nut and pickup means (**12**) associated with said strings for detecting a string vibration and providing a guitar sound signal in response to a string vibration, said guitar sound signal including a fundamental wave component and harmonics, signal source means (**15**) for generating a fundamental wave associated signal in response to said guitar sound signal, said fundamental wave associated signal having the frequency of said fundamental wave component included in said guitar sound signal, said signal source means for generating said fundamental wave associated signal comprising voltage controlled variable bandpass filter means (**41**) having a variable passband characteristic coupled to said pickup means and responsive to a control voltage for varying said passband characteristic in response to the frequencies of said guitar sound signal as a function of said control voltage, frequency/voltage converting means (**42**) responsive to said voltage controlled variable bandpass filter means for converting the frequency of the output of said voltage controlled variable bandpass filter means into a voltage representing the frequency of said output of said voltage controlled variable bandpass filter means (**41**), circuit means for applying said frequency representing voltage to said voltage controlled variable bandpass filter means (**41**) as said control voltage for adapting said passband characteristic of said voltage controlled variable bandpass filter means (**41**) to the frequency of said fundamental wave component included in said guitar sound signal, whereby said signal source means (**15**) is adaptively and dominantly responsive to the frequency of said fundamental wave component included in said guitar sound signal, voltage/frequency converting means (**35**) operatively connected to said frequency/voltage converting means (**42**) for providing a sound source signal having the frequency of said fundamental wave component included in said guitar sound signal, envelope signal providing means (**31**) responsive to said pickup means for detecting a signal envelope of said guitar sound signal and providing an envelope signal representing the envelope of said guitar sound signal, and sound synthesizing means (**36**) responsive to said sound source signal from said voltage/frequency converting means and to said envelope signal for modulating said sound source signal with said envelope signal for synthesizing a synthesized guitar tone, wherein said signal source means (**15**) for generating said fundamental wave associated signal further comprises level detecting means responsive to said frequency/voltage converting means (**42**) for level detecting said frequency associated voltage at a predetermined level for applying the level detected output to said voltage controlled variable bandpass filter means (**41**) as said control voltage, whereby the passband characteristic of said voltage controlled variable bandpass filter means is controlled by said level detected output of said level detecting means, wherein said frequency/voltage converting means comprises period/voltage converting means responsive to said voltage controlled variable bandpass filter means for converting the period of each cycle of the output of said voltage controlled variable bandpass filter means into a voltage associated with the period of each cycle of said output of said voltage controlled variable bandpass filter means, and wherein said frequency/voltage converting means comprises first sawtooth wave signal generating means responsive to the output of said voltage controlled variable bandpass filter means (**41**) for generating, as said fundamental wave associated signal, a first sawtooth wave signal associated with the period of a succeeding cycle of the fundamental wave component.

10. The guitar synthesizer in accordance with claim **1**, wherein said voltage controlled variable bandpass filter means comprises filter circuit means coupled to said pick-up means and responsive to said control voltage for exhibiting at least two predetermined distinctive and selective passband characteristics selected for allowing said guitar sound signal from said pick-up means to pass through one of said passband characteristics determined as a function of said control voltage, and selective controlling means responsive to said control voltage for controlling said filter circuit means for selectively allowing said guitar sound signal to pass through at least one of said passband characteristics of said filter circuit means determined as a function of said control voltage.

23. A guitar synthesizer, comprising: a guitar portion (**10**) including strings stretched between a bridge and a nut and pickup means (**12**) associated with said strings for detecting a string vibration and providing a guitar sound signal in response to a string vibration, said guitar sound signal including a fundamental wave component and harmonics, signal source means (**15**) for generating a fundamental wave associated signal in response to said guitar sound signal, said fundamental wave associated signal having the frequency of said fundamental wave component included in said guitar sound signal, said signal source means for generating said fundamental wave associated signal comprising voltage controlled variable bandpass filter means (**41**) having a variable passband characteristic coupled to said pickup means and responsive to a control voltage for varying said passband characteristic in responsive to the frequencies of said guitar sound signal as a function of said control voltage, frequency/voltage converting means (**42**) responsive to said voltage controlled variable bandpass filter means for converting the frequency of the output of said voltage controlled variable bandpass filter means into a voltage

representing the frequency of said output of said voltage controlled variable bandpass filter means (**41**), circuit means for applying said frequency representing voltage to said voltage controlled variable bandpass filter means (**41**) as said control voltage for adapting said passband characteristic of said voltage controlled variable bandpass filter means (**41**) to the frequency of said fundamental wave component included in said guitar sound signal, whereby said signal source means (**15**) is adaptively and dominantly responsive to the frequency of said fundamental wave component included in said guitar sound signal, voltage/frequency converting means (**35**) operatively connected to said frequency/voltage converting means (**42**) for providing a sound source signal having the frequency of said fundamental wave component included in said guitar sound signal, envelope signal providing means (**31**) responsive to said pickup means for detecting a signal envelope of said guitar sound signal and providing an envelope signal representing the envelope of said guitar sound signal, and sound synthesizing means (**36**) responsive to said sound source signal from said voltage/frequency converting means and to said envelope signal for modulating said sound source signal with said envelope signal for synthesizing a synthesized guitar tone, wherein said envelope signal providing means (**31**) comprises signal dividing means having first and second output terminals, said signal dividing means being responsive to said guitar sound signal for providing at said first output terminal a sound signal of the same phase as said guitar sound signal and for providing a sound signal of the opposite phase at said second output terminal, first rectifying means including a series connection of a first capacitor and a first diode coupled between said first output terminal and a reference potential for rectifying said sound signal of the same phase, second rectifying means including a second capacitor and a second diode coupled between said second output terminal and said reference potential for rectifying said sound signal of the opposite phase, and signal adding means coupled to said first and second rectifying means for adding the rectified outputs from said first and second rectifying means, whereby a separate smoothing circuit is avoided.

4,357,853

DIGITAL SEMICONDUCTOR CIRCUIT FOR AN ELECTRONIC ORGAN

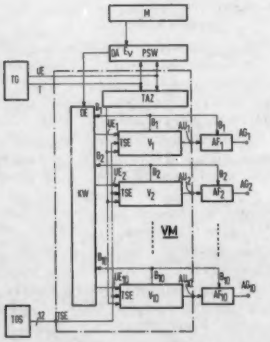
Helmut Rösler, Munich. and Klaus-Dieter Bigall, Vaterstetten, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 210,373

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948769

Int. Cl.[3] **G10H** *1/46, 5/00*

U.S. Cl. 84—1.27 **40 Claims**



1. Digital semiconductor circuit for an electronic organ having a plurality of control inputs, respectively, associated with individual playing keys of a keyboard of the organ and having a lesser number of audio signal outputs compared to the number of control inputs, as well as an audio frequency generator for applying electrical oscillations corresponding to the individual tones of the highest octave provided within playing range of the organ to a respective audio signal input of the semiconductor circuit,

wherein the individual control inputs are formed, respectively, by an information input of a respective cell of a clock-controlled shift register operated as a parallel-to-series converter, the individual playing keys and the respective control inputs associated therewith having respective connections of such construction that, in depressed condition of a respective playing key, the control input receives a level logical "1" and otherwise a level logical "0",

wherein both data output of the shift register as well as clock pulses serving for control thereof serve for controlling a switching system forming a connection between the audio signal inputs and the audio signal outputs, a part of the circuit of said switching system comprising a channel selector controlled by the data output serving, in turn, for selecting the audio signal output on the basis of the respectively depressed playing key with the electrical oscillation appertaining to said playing key, the clock pulses effecting information transfer in the shift register being provided additionally also as counting pulses for a digital tone address counter serving for identifying the respectively actuated playing key and the control input associated therewith,

wherein a plurality of mutually identical circuit parts forming, respectively, an output channel of said switching system, are provided having a signal output forming, respectively, one of said audio signal outputs, said circuit parts, in turn, being fed in similar manner by all electrical oscillations delivered via said audio signal inputs and also being controlled by said channel-selector circuit part of said switching system serving for selecting the respective audio signal output to be addressed, as well as by said digital tone address counter,

wherein the individual audio signal outputs are applied to respective mutually identical circuit parts each comprising an amplitude controller serving for improving audio quality and for influencing the amplitude of the electric audio signal oscillations delivered by the respective audio signal output, said amplitude-controller circuit parts having outputs for controlling in common an electroacoustic transducer, and

wherein the circuit parts of which said switching system is comprised have such a construction that, due to actuation of a playing key of the keyboard, each logical "1" transmitted by said data output of the shift register leads directly to addressing of one of said audio signal outputs by the electrical oscillation associated with the respective playing key and received directly or due to frequency division in said switching system due to addressing of the individual audio signal inputs, and that said one audio signal output thus selected is such that the last preceding addressing of said selected one audio signal output is most distant in time when compared with the last addressing of the remaining audio signal outputs.

4,357,854

AUTOMATIC RHYTHM PERFORMANCE DEVICE

Hiroshi Hirano, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 25, 1981, Ser. No. 277,078

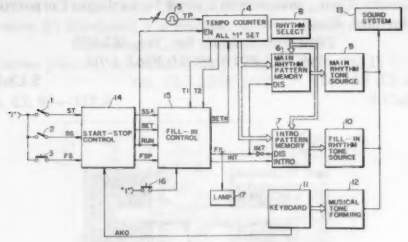
Claims priority, application Japan, Jun. 30, 1980, 55-88757

Int. Cl.[3] **G10F** *1/00*

U.S. Cl. 84—1.03 **9 Claims**

1. In combination with a synchro start automatic rhythm performance device intro control means for automatically providing an intro performance based on a predetermined pattern at the start of an automatic rhythm performance, and

inhibition means for inhibiting the operation of said intro control unit when said start of the automatic rhythm performance



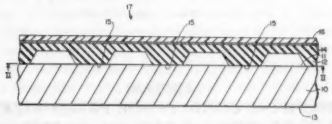
is a synchro start in which the automatic rhythm performance is started in synchronism with key depression.

4,357,855

RADIATION RESISTANT PROJECTILE CANISTER LINER

Paul L. Merz, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 1, 1980, Ser. No. 211,960
Int. Cl.³ F41F *3/00*
U.S. Cl. 89—1.816 **6 Claims**



1. A radiation resistant liner for a projectile canister, comprising:

a first layer of resilient material formed into a sheet having a grooved surface on one side and a smooth surface on the other side, the lands of the grooved surface bonded to the inner surface of the canister;

a second layer of thermally reflective material formed into a sheet covering and bonded to the smooth surface of the first layer; and

a third layer of material having low coefficients of friction and low coefficients of thermal and chemical activity formed into a sheet covering and bonded to the second layer, the third layer material being essentially transparent to the radiation reflected by the second layer.

4,357,856

PROPELLANT FOR LIQUID PROPELLANT GUN

Stanley E. Wood, Inyokern, and James T. Bryant, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 12, 1976, Ser. No. 741,822
Int. Cl.³ F41F *1/04*
U.S. Cl. 89—7 **6 Claims**

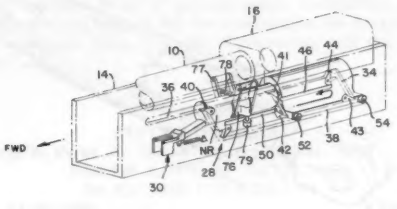
1. In a method for propelling a projectile from a gun barrel wherein a propellant is injected into a firing chamber behind said projectile and ignited, the improvement residing in using, as said propellant, a mixture of decahydronaphthalene nitric acid oxidizer.

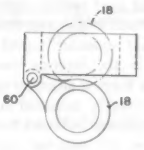
4,357,857

LOADING APPARATUS FOR RAPID FIRE WEAPON

Roland A. Magnuson, Seattle, Wash., assignor to Paccar Inc., Bellevue, Wash.

Filed Jul. 5, 1979, Ser. No. 55,065
Int. Cl.³ F41D *5/02*
U.S. Cl. 89—156 **9 Claims**





1. Reloading apparatus in a rapid fire weapon of the type using rounds having projectiles and cylindrical rimless cartridge cases and having a frame, at least one magazine for supplying rounds, a gun barrel which moves axially in recoil and counter-recoil relative to the frame, a breech aligned behind the gun barrel, means for opening and closing the breech, and a chamber for positioning a new round in alignment with the gun barrel within the breech the improvement comprising:

means for moving said chamber between a loading position outside of said breech and into a firing position within said breech;

means for delivering a new round from said magazine to said chamber in said loading position; and

means for discharging a spent round from said chamber;

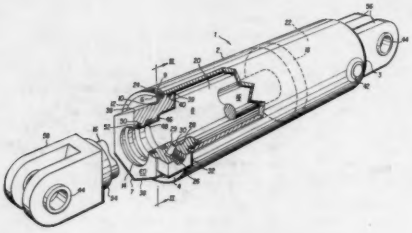
said chamber being operatively connected to said moving barrel in recoil and counter-recoil, said chamber moving means, said spent round discharging means and said new round delivering means all being actuated directly by said weapon recoil and counter-recoil movement, said new round being held stationary relative to the frame while the barrel and chamber are moved relative to the frame in such counter-recoil over the new round to envelope the new round fully into the chamber, said chamber moving means including a track having multiple ramps interconnected by upper and lower horizontal runs, said track having a first path parallel to the direction of gun barrel movement in recoil for guiding the chamber rearwardly aligned with the barrel until near the end of recoil so that the chamber retains gases in the barrel until dissipated, said chamber having forward and rearward guide members seated in said track, said guide members following said track to lower the chamber along said ramps during recoil and following said track to raise the chamber along said ramps back into said breech during counter-recoil.

4,357,858

FLUID ACTUATED CYLINDER ASSEMBLY

Thomas W. Wedman, Harper, Kans., assignor to Green Line, Inc., Harper, Kans.

Filed Feb. 15, 1980, Ser. No. 121,789
Int. Cl.[3] F01B *29/00, 31/00*
U.S. Cl. 92—128 1 Claim



1. A fluid actuated cylinder assembly adapted to be connected to a pressurized fluid system comprising:

a cylinder barrel closed at one end thereof and open at the opposite end, said cylinder barrel having an annular groove formed in the interior circumferential surface thereof and a slot formed adjacent said opposite end;

a cylinder head removably mounted in said opposite end of said cylinder barrel, said cylinder head having an annular groove formed in the exterior circumferential surface thereof in alignment with said annular groove formed in said cylinder barrel and an axially extending opening formed therein;

a cylinder rod slidably mounted in said axially extending opening formed in said cylinder head;

a piston connected with said cylinder rod within said cylinder barrel to form a first chamber and a second chamber;

a ring member positioned in said annular grooves formed in said cylinder barrel and said cylinder head slidable through said slot formed in said cylinder barrel;

first port means formed in said cylinder head for communicating said pressurized fluid system with said first chamber;

said first port means comprising a channel extending from an exterior portion of said cylinder head to an interior wall portion of said cylinder head;

said channel comprising an opening formed in said interior wall portion of said cylinder head, a radially extending port formed in said cylinder head, and a passage formed at an inclination to the longitudinal axis of said cylinder barrel;

said cylinder head further comprising a projection member extending radially from said cylinder head outside the circumference of said cylinder barrel wherein said first port means is partially formed in said projection member;

said ring member including a hook portion unitarily formed at one end thereof and wherein said cylinder head includes a second groove formed therein for cooperatively engaging said hook portion of said ring member;

said cylinder head including a plurality of flat exterior surface portions forming a regular polygonal projection for cooperation with an associated tool for rotation of said cylinder head so as to position said ring member in said annular grooves formed in said cylinder barrel and said cylinder head and wherein said cylinder head further comprises a single removable cylinder head; and

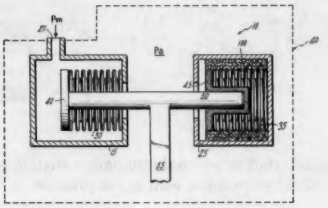
second port means formed in said cylinder barrel for communicating said pressurized fluid with said second chamber.

4,357,859

PRESSURE SENSOR

Donald Preston, Agawam, Mass., and Robert G. Yeaton, East Granby, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 8, 1981, Ser. No. 252,505
Int. Cl.[3] F01B *19/04;* F16J *3/04*
U.S. Cl. 92—41 5 Claims



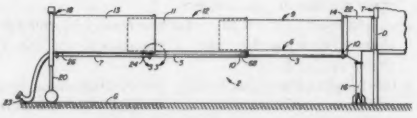
1. A pressure sensor comprising a housing, a bellows disposed within said casing and sealed thereto, said bellows being responsive to the pressure of a fluid within said housing to cause displacement of said bellows, said pressure sensor being characterized by a wrapping of vibration damping material disposed about the major surface of said bellows, said wrapping being saturated with said fluid, said saturated wrapping serving to minimize fatigue fractures of said bellows by damping vibration of said bellows at the natural frequency thereof.

4,357,860

TELESCOPING CONDUIT FOR PRESSURIZED AIR

David W. Krzak, Belmont, Calif., assignor to McCormick-Morgan, Inc., San Francisco, Calif.

Filed Oct. 27, 1980, Ser. No. 200,810
Int. Cl.[3] F24F *7/007*
U.S. Cl. 98—33 R 14 Claims



1. Apparatus for supplying pressurized air to waiting aircraft along a telescoping walkway having a predetermined number of telescoping walkway segments, comprising:

a plurality of telescoping tubes having first and second ends;

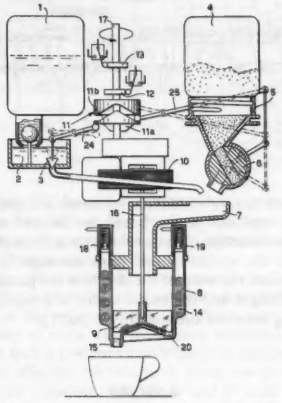
means for mounting one said tube along the length of each of said telescoping segments, said mounting means adapted to mount said tubes for telescoping, coaxial engagement with one another, the first end of one tube engaging and surrounding the second end of the adjacent tube, so that as as said walkway segments are telescoped and retracted, said tubes are telescoped and retracted therewith; and

means for continuously fluidly sealing said mounted telescoping tubes irrespective of the relative telescopic positions thereof so that the pressurized air can be passed through said telescoping coaxially engaged tubes to provide the pressurized air at a desired pressure and at a desired rate of flow to the aircraft thereby providing an auxiliary source of air power for the aircraft.

4,357,861
APPARATUS FOR BREWING A HOT BEVERAGE MADE UP OF A SOLUTION OF A POWDERED SUBSTANCE IN A LIQUID

Silvestro Di Girolamo, Via Barzoni, 2, Milan, Italy

Filed Aug. 1, 1977, Ser. No. 820,819
Claims priority, application Italy, Aug. 6, 1976, 26122 A/76
Int. Cl.³ A23F *5/00*
U.S. Cl. 99—323.3 **8 Claims**

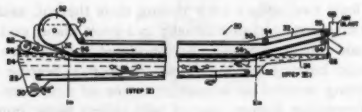


1. A machine for brewing a hot whipped beverage formed of a solution of a powdered substance in a liquid, said machine comprising: a chamber having a side wall and a bottom wall; first and second metering means associated with said chamber operable upon activation to dispense predetermined quantities of powdered substance and liquid into said chamber; a blending device disposed in the chamber and motor means for rotating said device, the relationship between said blending device and the chamber side wall being such that upon operation of said device the liquid and powdered substance dispensed into said chamber is whirled and displaced against the chamber side wall and is supported thereby centrifugal force; heating means associated with said chamber side wall for rapidly heating the dispensed liquid as the same is whirled against said side wall; means defining a discharge port in said bottom wall for discharging whipped heated beverage by gravity when said blending device stops rotating; and control means for controlling said motordriven blending device, said first and second metering means and said heating means.

4,357,862
APPARATUS FOR THE CONTINUOUS PRODUCTION OF FRIED DOUGH CRUSTS

David N. Anstett, Duluth, Minn.; Egbert W. Volkert, Poplar, Wis., and Richard F. Schryer, Duluth, Minn., assignors to Jeno's, Inc., Duluth, Minn.

Division of Ser. No. 127,238, Mar. 4, 1980, Pat. No. 4,308,286.
This application Jul. 7, 1981, Ser. No. 281,061
Int. Cl.³ A47J *37/12*
U.S. Cl. 99—355 **2 Claims**

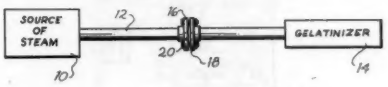


1. Apparatus for continuously producing fried dough crusts that includes means for retaining an elongated bath of oil, a pair of endless conveyors traversing a part of said bath beneath the surface of the oil in uniform, spaced, parallel relation to each other, the spacing between the conveyors being maintained within the range of $\frac{1}{8}$" to $\frac{3}{8}$" for the confinement of dough pieces therebetween, the path of traverse of said conveyors demarking the cooking zone within the bath, means for maintaining the oil in the cooking zone at temperatures of about 360°–410° F., means for continuing the confinement of the crusts beyond the bath to a delivery point, and means for rapidly cooling the crusts before reaching said delivery point, and in which one of the conveyors is above the other, the upper conveyor being of balanced-weave construction, the lower conveyor being of flat-flex construction, the designs of said conveyors being incapable of registering with one another.

4,357,863
SETTABLE ORIFICE

George W. Parks, Jr., 314 36th St., Snyder, Tex. 79549

Filed Feb. 6, 1978, Ser. No. 875,746
Int. Cl.³ A23K *1/04;* **A23J** *1/06*
U.S. Cl. 99—483 **4 Claims**



1. A device for having a settable opening in a pipeline comprising:

a. a pair of facing parallel flanges in the pipeline,
b. bolts holding the flanges together,
c. a bore in each flange,
d. the bores aligned with each other,
e. a plate securely clamped between the flanges by said bolts,
f. an orifice in the plate,
g. said orifice offset from said bore, and
h. said plate entirely confined within said flanges and unconnected to any structure outside said flanges,
i. a gelatinizer for gelatinizing fresh blood within a slaughter house,
j. a source of steam under pressure,
k. said pipeline having said device therein connecting said source of steam to said gelatinizer,
l. whereby movement of the plate reduces the fluid flow through the pipeline.

4,357,864
PNEUMATIC GRAIN CONVEYANCE RICE MILL

Felipe Salete-Garces, Avenida Ano de Juarez 198, Granjas San Antonio, Iztapalapa, Mexico (13, D.F.)

Filed Jul. 8, 1980, Ser. No. 166,878
Claims priority, application Mexico, Jul. 10, 1979, 178410
Int. Cl.³ A23N *5/00*
U.S. Cl. 99—484 **13 Claims**

1. In a rice mill comprising grain feed means, grain husking means for husking grain delivered by said grain feed means, grain polishing and whitening means connected to a discharge of said grain husking means, and pneumatic cyclonic separator means for collecting husk, flour and bran released from the grain, the improvement comprising:

first pneumatic grain conveyor means for pneumatically conveying grain from said grain feed means to said grain husking means and from said grain husking means to said grain polishing and whitening means;

first grain decelerator and abrading pneumatic sifter means arranged to receive a discharge from said pneumatic grain conveyor means; and

first vibrational sieve means arranged to receive grain from said grain decelerator and abrading pneumatic sifter

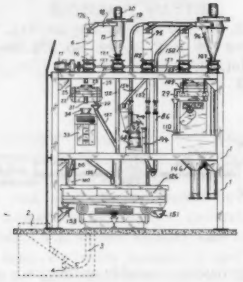
means and to discharge screened grain to said husking means;

said first grain decelerator and abrading pneumatic sifter means comprising:

a housing having an inlet for air and entrained grain, an outlet for sifted grain, and suction duct means connected to said pneumatic cyclonic separator means for driving air through said housing;

adjustable plate means being disposed within said housing, said adjustable plate means being mounted at a level slightly below said inlet for air and entrained grain and being movable to narrow or broaden said inlet;

first curved abrasive lined plate means being disposed within said housing and arranged with a concave abrasive lined portion thereof facing said inlet past said adjustable plate means;



second curved abrasive lined plate means being disposed within said housing, said second curved plate means being arranged below said first curved plate means and having a curvature opposite that of said first curved plate means;

a plurality of third curved abrasive lined plate means arranged in a cascading array below said second curved plate means; and

air separator means arranged at a bottom of said sifter means;

an arrangement of said first, second and third curved abrasive lined plate means being such that said grain slides thereon in a cascade type path and is swept by the air and therefore sifted thereby so that said grain is heavily abraded and decelerated as said grain moves down said cascading array of said first, second and third curved abrasive lined plate means which prevent said grain from impacting against any hard surface.

4,357,865

APPARATUS FOR THE RECOVERY OF OIL FROM OIL-BEARING VEGETABLE MATTER

Manfred Knuth, and Thorsten Homann, both of Hamburg, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit Beschrankter Haftung, Essen, Fed. Rep. of Germany

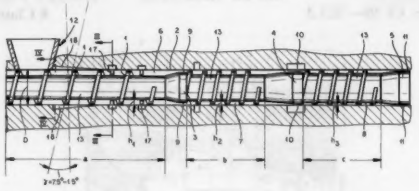
Filed Apr. 11, 1980, Ser. No. 139,338

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915538

Int. Cl.³ B30B *9/14*

U.S. Cl. 100—117 **4 Claims**

1. An apparatus for cold pressing vegetable oil bearing matter without intervening mechanical or thermal conditioning, which comprises a worm press formed with a perforated cylinder and a worm rotatable in said cylinder, said worm defining with a wall of said cylinder downstream, at least one throttle forming a shear gap having a cross section smaller than the cross section between successive turns of a flight of the worm, said worm and said cylinder being subdivided along their lengths into a plurality of sections by respective shear gaps and throttles with an initial section having a worm length to diameter ratio of about 4.5:1 and a subsequent section having a worm length to diameter ratio of about 2.3:1, each of said throttles being defined by an inwardly projecting portion from the wall of said cylinder, said flight being interrupted over the length of said press, the depth of the passage formed between successive turns of said flight being substantially 2 to 12% of the diameter of said worm, wherein the pitch angle of said



worm is between substantially 7.5° and 15° and decreases between an upstream end of said worm and downstream thereof in the direction of material advance through said press, and wherein the widths of said gaps decrease in the downstream direction, the ratio of the depth of the passage between turns of said flight and the radial width of a gap downstream thereof being between substantially 3 and 15.

4,357,866

CALENDER FOR A TRAVELING WEB, SUCH AS A PAPER WEB

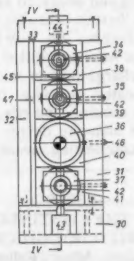
Günter Rohde, Konigsbronn-Zang, and Christian Schiel, Heidenheim, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Aug. 12, 1980, Ser. No. 177,380

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935160

Int. Cl.³ B30B *3/04*

U.S. Cl. 100—162 R **17 Claims**



1. A calender for a traveling web comprising:

two parallel frames, said frames each having a bottom part and each having one arm extending from the respective said bottom part;

bearing brackets secured in a stationary manner to each of said arms;

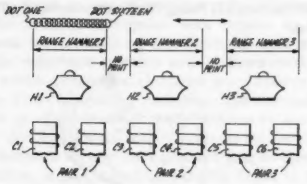
at least two rollers each having ends thereof, said rollers being arranged substantially in a press plane; said ends of said rollers each being accomodated in respective ones of said bearing brackets, each respective bearing bracket being secured to a respective one of said arms of said respective frames, one of said rollers being immovably fixed in said press plane relative to said bearing brackets and the other of said rollers being movable in said press plane relative to said bearing brackets for forming at least one press nip.

4,357,867

MULTIPLE COIL HAMMER ACTUATOR SYSTEM

Richard E. Wagner, Auburn, and C. Gordon Whitaker, Mercer Island, both of Wash., assignors to Mannesmann Tally Corporation, Kent, Wash.

Filed Mar. 27, 1980, Ser. No. 134,347
Int. Cl.[3] B41J 9/12
U.S. Cl. 101—93.09 10 Claims



1. A multiple coil/hammer actuator system comprising:

a plurality of coils mounted side-by-side in a fixed position for producing, when energized, adjacent magnetic fields lying along a common axis;

a plurality of resilient hammer means, smaller in number than the number of coils, mounted for oscillatory movement in the adjacent magnetic fields produced by said plurality of coils, said oscillatory movement being such that at least a portion of each hammer means moves in the region wherein the magnetic fields are produced by at least two adjacent coils when said at least two adjacent coils are energized, said portion of said hammer means being formed of a ferromagnetic material that is attracted toward one or both of said at least two adjacent coils when said one or both of said at least two adjacent coils are energized, said attraction acting against said resilience of said resilient hammer means to create stored mechanical energy that is released when the energized one or both of said at least two adjacent coils is de-energized, said release creating a hammer actuation force; and,

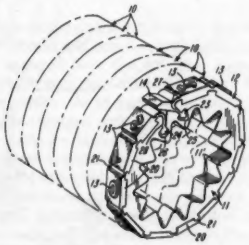
control means connected to said plurality of coils for controlling the energization of said plurality of coils such that one or both of the two adjacent coils related to each of said hammer means is selectively energized in accordance with the position of said related hammer means in the region where magnetic fields are produced by said at least two adjacent coils and the nature of a control signal.

4,357,868

PRINT WHEEL AND METHOD OF MAKING SAME

Robert M. Pabodie, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Feb. 12, 1981, Ser. No. 233,792
Int. Cl.[3] B41J 1/22
U.S. Cl. 101—110 9 Claims



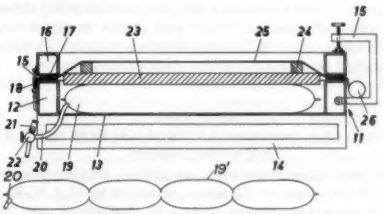
7. A print wheel, comprising: a generally annular base having a generally annular surface, the base having two closely spaced recesses which open to the outer periphery of the base, the recesses defining a first support portion on the annular surface which extends between the recesses over substantially the entire periphery of the annular surface and a second support portion which extends between said recesses over substantially the remainder of the periphery of the annular surface, a molded, unitary, flexible printing band having opposite end portions, the printing band having a series of different printing elements disposed at spaced intervals along its length between the end portions, the printing band being disposed about the first support portion and having its end portions projecting into and held in the recesses, the printing element adjacent one of the end portions projecting beyond one of said recesses and being supported at a printing position on the second support portion, wherein the second support portion has a printing element supporting surface inclined at an acute angle with respect to a radial line passing through the axis of the print wheel.

4,357,869

DEVICE FOR STRETCHING AND FIXING A CLOTH ON A FRAME

Gösta Wadstein, Von Holtens Väg 1, Lerum, Sweden (443 00)

PCT No. PCT/SE 79/00090, § 371 Date Dec. 18, 1979, § 102(e) Date Dec. 10, 1979, PCT Pub. No. WO79/00939, PCT Pub. Date Nov. 15, 1979
This application filed Apr. 12, 1979, Ser. No. 177,752
Claims priority, application Sweden, Apr. 18, 1978, 7804347; Italy, Apr. 18, 1979, 48771 A/79
Int. Cl.[3] B05C 17/06
U.S. Cl. 101—127.1 3 Claims



1. A device for stretching and fixing a cloth such as a screen, strainer, bolting, filter cloth or the like on a frame comprising a frame-shaped stand having a border defining a free space therewithin, a clamping edge on said border, a pressure plate movable within the border of the stand and extending over a substantial part of the free space within said border and at least one member acting upon the pressure plate for displacing the pressure plate with respect to the stand, said frame-shaped stand being provided with a bottom, said member comprising at least one resilient expandable pad inflatable with a fluid and arranged between said bottom of the stand and the pressure plate, the pressure plate having outer peripheral dimensions a predetermined amount smaller than the outer peripheral dimensions of said free space so that the pressure plate is self-adjustable in different angles in relation to said bottom, and a clamping device removably attachable to said stand for clamping the cloth on all sides against the clamping edge of said border, comprising a clamping frame and clamping means for tightening said clamping frame against said clamping edge.

4,357,870
DRIVING MECHANISM FOR GROUPS OF ADJUSTABLE SHEET-GRIPPING ELEMENTS IN A TRANSFER CYLINDER OF A SHEET-FED PRINTING MACHINE

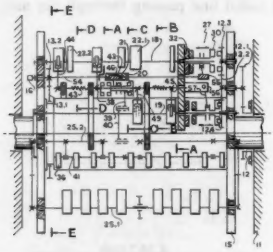
Otfried Rudolph, Dresden; Gunter Peter, and Karlheinz Fischer, both of Coswig, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jul. 15, 1981, Ser. No. 283,672

Claims priority, application German Democratic Rep., Jun. 30, 1980, 222245

Int. Cl.³ B41F *21/00*

U.S. Cl. 101—246 **13 Claims**



1. A driving mechanism for groups of gripping elements arranged in a rotary sheet guiding cylinder of a sheet-fed printing machine which is switchable for selecting one of two operational modes such as printing on one side of the sheet only or printing on both sides of the sheet, said driving mechanism comprising transmission gears supported for rotation in said guiding cylinder; two control shafts arranged in said guiding cylinder for rotation parallel to the axis of rotation of said guiding cylinder; a first set of cams mounted on one of said control shafts for driving said groups of gripping elements in one operational mode; a second set of cams mounted on the other control shaft for driving said groups of gripping elements in the other operational mode; and clutch means arranged between said control shafts and said gears to activate a selected control shaft and deactivate the other control shaft.

4,357,871
SEPARABLE INK SUPPLY TROUGH FOR ROTARY PRINTING PRESS

Ingo Köbler, Gessertshausen, and Rainer Burger, Augsburg, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,095

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 2929891

Int. Cl.³ B41F *31/02*

U.S. Cl. 101—350 **9 Claims**

1. Separable ink supply trough structure for a rotary printing machine having

a lower support portion (3) having an upper inclined support surface;

an ink transfer roller (6);

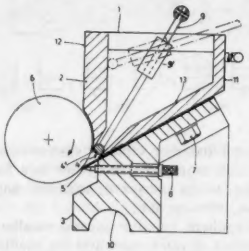
a doctor blade (5) located on the inclined support surface to adjust the amount of ink being supplied to the transfer roller;

means (8) for controlling the position of the doctor blade with respect to the transfer roller (6) secured to the lower portion;

an upper portion (2) including a bottom wall and two wall leg portions (11,12) shaped to define an ink trough having an inclined bottom wall (13),

said ink trough being formed with an outlet (4) formed by non-parallel surfaces which are fixed with respect to each other at the lowest corner of said upper portion, said surfaces being the end faces of the bottom wall and one leg portion (12) of said upper portion which is adjacent said corner, said outlet tapering towards a narrow mouth and, in cross section, being essentially funnel-shaped, said outlet being directed towards and positioned adjacent the transfer roller at the lowermost edge of the bottom wall and located above the doctor blade;

the upper portion (2) being removably secured to the lower portion;



the doctor blade being positioned between said upper and lower portions, carried by one of said portions and extending at least in part across said outlet to direct the flow of ink from the outlet to the transfer roller and control the quantity of ink being applied on the roller;

and a closure element (9) located within said ink trough selectively movable between said non-parallel surfaces of said outlet between blocking and unblocking positions of said outlet, to permit closing of the opening in the ink trough and removal thereof independently of the positions of the doctor blade.

4,357,872
ARRANGEMENT FOR REMOVAL OF DIRT OR OTHER IMPURITIES INTERFERING WITH THE INK FLOW FROM THE INK FOUNTAIN OF A PRINTING PRESS

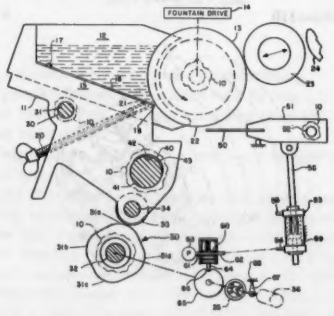
Claus Simeth, Offenbach am Main, and Erich Pietsch, Offenbach-Bieber, assignors to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 218,823, Dec. 22, 1980, abandoned. This application Jan. 22, 1981, Ser. No. 227,376

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951649

Int. Cl.³ B41F *31/04, 31/06, 35/04;* B41L *27/06*

U.S. Cl. 101—350 **5 Claims**



1. An ink fountain for a printing press having a main frame comprising, in combination, a fountain sub-frame defining a

trough for containment of ink, a stationary fountain roller journalled with respect to the main frame in position to form one side of the trough, a fountain blade secured to the sub-frame for orienting the blade in a generally chordwise direction with the tip of the blade spaced from the surface of the fountain roller, means interposed between the sub-frame and the blade for establishing the thickness of the ink film fed by the blade when the sub-frame occupies a reference position, means for rotating the fountain roller slowly for conveyance of the ink film about an arc of transport, the sub-frame being mounted for rocking movement with respect to the main frame, means for establishing the limits of such movement between the reference position and a downwardly angled position in which an enlarged clearance gap is created at the tip of the blade with the resulting rush of ink therethrough serving to clear the tip of the blade of contamination by accumulated particles of dirt and fibrous material, means for oscillating the sub-frame between its reference position and its downwardly angled position, means including a doctor blade in the arc of transport movable between a retracted position and an intercepting position in which the doctor blade contacts the fountain roller to divert from the arc of transport the contaminated ink released from the clearance gap, control means for the oscillating means, and means operated automatically upon movement of the sub-frame from its reference position for moving the doctor blade to its intercepting position.

4,357,873
APPARATUS FOR DESTROYING STRUCTURES SUCH AS CONCRETE WALLS

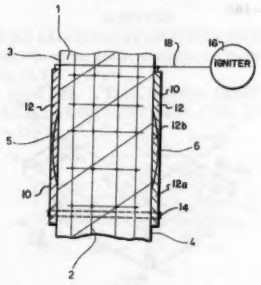
Ernst H. Jager, Schrobenhausen, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Division of Ser. No. 117,097, Jan. 31, 1980. This application Feb. 5, 1981, Ser. No. 231,802

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1979, 2904338

Int. Cl.³ F42B *1/02*

U.S. Cl. 102—310 **3 Claims**



1. A device for destroying a reinforced concrete wall having a particular thickness and opposite side surfaces comprising:

a first plate engaged over and covering an area of one side surface which area has dimensions that are large with respect to a thickness of said first plate;

a second plate engaged over and covering an area of the other side surface which area has dimensions that are large with respect to a thickness of said second plate, said areas of the one and other side surfaces aligned with each other across the thickness of the wall; each of said first and second plates including at least a portion made of explosive material facing said areas respectively;

holding means for holding said first and second plates firmly against said areas respectively; and

ignition means connected to the explosive material of said first and second plates for successively igniting the explosive material of said first and second plates, said successive igniting occurring within a time period shorter than the time required for a shock wave produced by an explosion of the explosive material of one of said first and second plates to traverse the particular wall thickness whereby the explosive material of said first and second plates are ignited and exploded to produce shock waves in the wall which meet each other within the wall.

4,357,874
MOBILE ARRANGEMENT AND METHOD FOR IMPROVING A TRACK BED

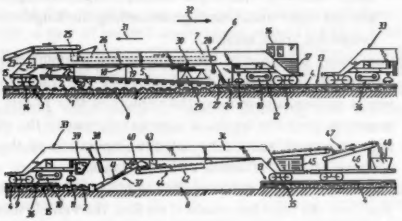
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Nov. 19, 1980, Ser. No. 208,191

Claims priority, application Austria, Jan. 15, 1980, 194/80

Int. Cl.³ E01B *27/08*

U.S. Cl. 104—2 **11 Claims**



1. A mobile arrangement for improving a track bed comprising a layer of ballast disposed on a subgrade by disposing a layer of a protective material between the subgrade and the ballast, which is essentially comprised of two vehicles consisting of

(a) a first self-propelled vehicle including a frame having two ends,

(1) a hoist mounted on the vehicle frame for lifting an assembled track section off the t ck bed whereby a trackless renewal section is created and

(2) means mounted on the vehicle frame for conveying, discharging and distributing ballast and protective material,

(3) the vehicle frame having a length bridging the trackless renewal section and respective track sections adjoining the trackless renewal section at respective ends thereof in the regions of the vehicle frame ends,

(b) a second self-propelled vehicle including a frame having two ends, one end of the frame of the first vehicle and one end of the frame of the second vehicle facing each other,

(1) means mounted on the frame of the second vehicle for excavating the ballast and for conveying the excavated ballast,

(c) a respective triple-undercarriage arrangement supporting the one end of each vehicle frame, each triple-under-carriage arrangement consisting of two separately operable on-track undercarriages and an off-track undercarriage therebetween, and

(d) another undercarriage supporting the frame of each vehicle, the distance between the triple-undercarriage arrangement and the other undercarriage supporting each vehicle frame exceeding the length of the assembled track section.

10. A method of improving a track bed comprising a layer of ballast disposed on a subgrade by disposing a layer of a protective material between the subgrade and the ballast, which comprises the following successive steps:

(a) detaching an assembled track section from the track while leaving the detached track section in place,

(b) moving a first self-propelled vehicle in one direction over the detached assembled track section, the vehicle including

(1) a frame having two ends,

(2) a hoist mounted on the vehicle frame for lifting the detached assembled track section off the track bed whereby a trackless renewal section is created,

(3) means mounted on the vehicle frame for conveying, discharging and distributing ballast and protective material,

(4) the vehicle frame having a length bridging the trackless renewal section and respective track sections adjoining the trackless renewal section at respective ends thereof in the regions of the vehicle frame ends,

(5) a triple-undercarriage arrangement supporting one end of the vehicle frame on one of the adjoining track sections and consisting of two on-track undercarriages and an off-track undercarriage, and

(6) another undercarriage supporting the frame, the distance between the triple-undercarriage arrangement and the other undercarriage exceeding the length of the assembled track section,

(c) operating the hoist to lift the detached assembled track section off the track bed and to create the trackless renewal section, and moving the vehicle further in said one direction over the trackless renewal section to the other adjoining track section by selective operation of the respective on- and off-track undercarriages,

(d) moving a second self-propelled vehicle in the one direction over the trackless renewal section, the vehicle including

(1) a frame having two ends, the one end of the frame of the first vehicle and one end of the frame of the second vehicle facing each other,

(2) means mounted on the frame of the second vehicle for excavating the ballast and for conveying the excavated ballast, and

(3) a triple-undercarriage arrangement supporting the one end of the frame of the second vehicle and consisting of two on-track undercarriages and an off-track undercarriage,

(e) moving the second vehicle in the one direction over the trackless renewal section by selective operation of the respective on- and off-track undercarriages,

(f) operating the excavating means to excavate the ballast and operating the conveying means to convey the excavated ballast away from the second vehicle to remove the ballast from the trackless renewal section while moving the second vehicle in the one direction to the one adjoining track section by selective operation of the respective on- and off-track undercarriages,

(g) moving the first vehicle in a direction opposite to the one direction back over the trackless renewal section by selective operation of the respective on- and off-track undercarriages while operating the conveying, discharging and distributing means to convey, discharge and distribute protective particulate material over the subgrade in the trackless renewal section, and planing and compacting the distributed protective particulate material to provide the layer of protective material,

(h) moving the first vehicle in the one direction over the trackless renewal section by selective operation of the respective on- and off-track undercarriages while operating the conveying, discharging and distributing means to convey, discharge and distribute ballast over the layer of protective material, and

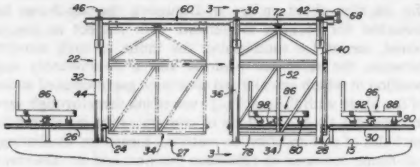
(i) moving the first vehicle again over the trackless renewal section and operating the hoist to lower the lifted detached assembled track section onto the ballast.

4,357,875

CONVEYOR SYSTEM WITH ACCESS WAY

Russell Scheel, Easton, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Nov. 24, 1980, Ser. No. 209,811
Int. Cl.³ B61J *1/10*
U.S. Cl. 104—50 **11 Claims**



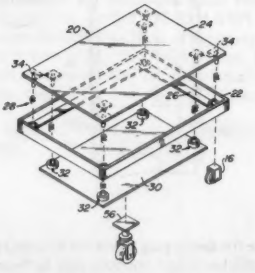
1. A conveyor comprising a conveyor track for driverless vehicles, means to facilitate access across a portion of the conveyor track, said means including a gap in the conveyor track, a shuttle vehicle supported for reciprocatory movement across the gap from a vehicle receiving position at one end of the gap to a vehicle discharging position at the other end of the gap, the length of said shuttle vehicle being less than the length of the gap whereby an unobstructed portion of the gap is an access way, said shuttle vehicle having means to support a driverless vehicle and means for moving a driverless vehicle from one portion of the track onto said shuttle vehicle when in its receiving position and for moving a driverless vehicle off the shuttle vehicle onto another portion of the track when the shuttle vehicle is in its discharging position.

4,357,876

DRIVERLESS VEHICLE WITH PROPORTIONAL DRIVE

Bruce Nobel, Bath, Pa., assignor to Si Handling Systems, Inc., Easton, Pa.

Filed Apr. 17, 1980, Ser. No. 141,098
Int. Cl.³ B61B *13/12*
U.S. Cl. 104—166 **9 Claims**



1. A driverless vehicle comprising a deck, means including one substrate below a portion of the deck, support wheels coupled to said deck and adapted to ride on tracks, a drive wheel adapted to be driven by a centrifugal drive tube, a mount, said drive wheel being supported from the substrate by said mount for rotation about a horizontal axis, said mount and drive wheel being coupled to said substrate so as to be pivotable about an upright axis between a drive position and a stop position, means including assemblies coupling said deck to said substrate and support wheels so that the downward force transmitted from the deck to the substrate varies with the load on the deck with only a portion of the load being transmitted directly to the drive wheel and the remainder of the load being transmitted to the support wheels thereby controlling the force

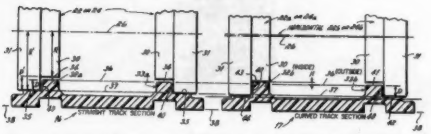
between the drive wheel and the drive tube to be in driving frictional contact therewith.

4,357,877

TOY TRAIN

James F. Mariol, 481 Deanview Dr., Cincinnati, Ohio 45224

Filed Sep. 8, 1980, Ser. No. 185,158
Int. Cl.³ B61F 9/00
U.S. Cl. 104—243 **7 Claims**



1. A toy train and track assembly, said assembly comprising a train car having a pair of wheels each of which is of stepped cross section to define two separate rims, one rim of each wheel being of a smaller diameter and the other rim of that wheel being of a larger diameter, and

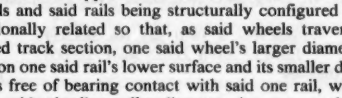
a curved track section having an inside rail and an outside rail, each of said inside and outside curved rails being of stepped cross-section to define upper and lower surfaces for cooperating with the stepped cross section of said car's wheels, said wheels and said rails being structurally configured and dimensionally related so that, as said wheels traverse said curved track section, one said wheel's larger diameter rim rests on one said rail's lower surface and its smaller diameter rim is free of bearing contact with said one rail, while the other said wheel's smaller diameter rim rests on the other said rail's upper surface and its larger diameter rim is free of bearing contact with said other rail.

4,357,878

FLUID LOAD DISTRIBUTION SYSTEM

Franco Fedele, Florence, Italy, assignor to Norca Corporation, Great Neck, N.Y.

Filed Feb. 7, 1980, Ser. No. 119,219
Int. Cl.³ B60P 3/40; B61F 3/00, 5/24
U.S. Cl. 105—159 **7 Claims**



1. A load equalizing system for inhibiting the application of a torsional load to a railway car adapted to move along a track made up of a pair of rails and having a banked curve including in combination, a first truck having respective wheels adapted to run along said rails, a second truck having respective wheels adapted to run along said rails, and load applying means including a span bolster extending between said trucks to form an assembly having a nominal longitudinal centerline when the trucks are on a straight portion of said track, a pair of first transversely spaced bearings on opposite sides of said longitudinal centerline for transmitting vertical load from said span bolster to said first truck, a pair of second transversely spaced bearings on opposite sides of said centerline for transmitting vertical load from said span bolster to said second truck, each of said bearings comprising a pair of normally contacting solid elements, means mounting one element of each of the first and second bearings on one side of said longitudinal centerline directly and rigidly on said span bolster for movement therewith, means mounting the other elements of said first and second bearings on said one side of said centerline directly and rigidly on the respective first and second trucks for movement therewith and force transmitting means actuated by said banked curve as said car negotiates said curve interconnecting corresponding elements of the first and second bearings only on the other side of said longitudinal centerline for equalizing the load on said first and second bearings.

6. In a load equalizing system for inhibiting the application of a torsional load to a railway car adapted to move along a track made up of a pair of spaced rails and incorporating a banked curve, an assembly having a nominal longitudinal centerline when on a straight portion of said way, said assembly comprising a first truck having wheels adapted to move along said rails, a second truck having wheels adapted to move along said rails, a first intermediate bolster spanning said first and second trucks, a pair of first transversely spaced vertical load applying bearings between said first intermediate bolster and said first truck on opposite sides of said longitudinal centerline, a pair of second transversely spaced vertical load applying bearings disposed between said first intermediate bolster and said second truck on opposite sides of said centerline, each of said first and second bearings comprising a pair of normally contacting solid elements, means mounting one element of each of the first and second bearings on the same side of said longitudinal centerline directly on said first intermediate bolster for movement therewith, means mounting the other elements of said first and second bearings on said same side of said longitudinal centerline directly on the first and second respective trucks for movement therewith, force transmitting means actuated by said banked curve as said assembly negotiates said curve interconnecting corresponding elements of the first and second bearings only on the other side of said longitudinal centerline opposite said same side to equalize the load on said first and second bearings, a third truck having wheels adapted to move along said rails, a fourth truck having wheels adapted to move along said rails, a second intermediate bolster spanning said third and fourth trucks, a pair of third transversely spaced vertical load applying bearings disposed between said second intermediate bolster and said third truck on opposite sides of said longitudinal centerline, a pair of fourth transversely spaced vertical load applying bearings disposed between said second intermediate bolster and said fourth truck on opposite sides of said longitudinal centerline, each of said third and fourth bearings comprising a pair of normally contacting solid elements, means mounting one element of each of the third and fourth bearings on the same side of said longitudinal centerline directly on said second intermediate bolster for movement therewith, means mounting the other elements of said third and fourth bearings on said last-named same side of said longitudinal centerline directly on the third and fourth respective trucks for movement therewith, force transmitting means actuated by said banked curve as said assembly negotiates said curve interconnecting corresponding elements of the third and fourth bearings only on the other side of said longitudinal centerline opposite to said last-named same side to equalize the load on said third and fourth bearings, a main bolster spanning said first and second intermediate bolsters, a pair of fifth transversely spaced vertical load applying bearings between said main bolster and said first intermediate bolster on opposite sides of said longitudinal centerline, a pair of sixth transversely spaced vertical load applying means between said main bolster and said second intermediate bolster on opposite sides of said centerline, each of said fifth and sixth bearings comprising a pair of normally contacting solid elements, means mounting one element of each of the fifth and sixth bearings on the same side of said longitudinal centerline directly on said main bolster for movement therewith, means mounting the other elements of said fifth and sixth bearings on said last-named same side of said longitudinal centerline directly on the first and second respective intermediate bolsters for movement therewith, force transmitting means actuated by said banked curve as said assembly negotiates said curve interconnecting

corresponding elements of the fifth and sixth bearings only on the other side of said longitudinal centerline opposite to said last-named same side to equalize the load on said fifth and sixth bearings.

4,357,879

AIR SPRINGING BOGIE TRACTION LINK SUSPENSION

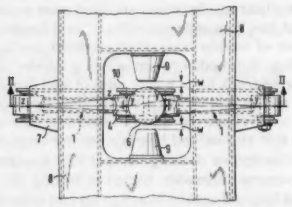
Sandor Mohacsi, Nuremberg; Theodor Hammen, Rosstal, and Walter Schmid, Nuremberg, all of Fed. Rep. of Germany, assignors to MAN Maschinenfabrik Augsburg-Nuernberg AG, Nuremberg, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,000

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1978, 2850878

Int. Cl.³ B61F *5/10, 5/20, 5/52*

U.S. Cl. 105—199 R **5 Claims**



1. A bolsterless bogie for use in rail vehicles having an underframe provided with a center pivot, comprising

a bogie frame having a transom;

air spring bellows arranged in a transverse center plane between said underframe and said bogie frame;

at least one link directly connecting said transom with said center pivot, said link being disposed horizontally and extending lengthwise of the travel direction of the rail vehicle;

rubber joints disposed horizontally and transversely to said travel direction, respectively;

said rubber joints connecting said link with said bogie frame and said center pivot;

means for transmitting relative motion between said center pivot and said bogie frame, including rubber buffers in the horizontal plane of the links and limiting relative transverse motion between said center pivot and said bogie frame; and

stops on said transom spaced above said rubber joints effective in said travel direction of said rail vehicle and interposed between said center pivot and said bogie frame.

4,357,880

BOLSTER FOR A RAILROAD CAR TRUCK

Hans B. Weber, Bedford, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Aug. 25, 1980, Ser. No. 180,835

Int. Cl.³ B61F *5/06, 5/12, 5/38*

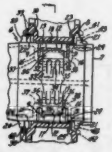
U.S. Cl. 105—206 R **12 Claims**

1. A bolster for a railroad car truck, comprising:

(a) a pair of pockets recessed inwardly of the bolster towards each other adjacent each one of a pair of opposing outer free ends of the bolster, the pockets extending between a pair of vertically spaced top and bottom walls of the bolster when the bolster is in a normal horizontal position for supporting sideframes of the truck;

(b) a pair of lugs projecting outwardly of the bolster and sandwiching each of the pockets therebetween and designed to restrict movement of the sideframes longitudinally of the bolsters;

(c) a pair of coplanar inboard and outboard sidewalls extending from the top wall between each pocket and an adjacent pair of lugs which sandwich the pocket therebetween, the outboard sidewalls being closer the outer free ends of the bolster than the inboard sidewalls, the outboard sidewalls each having an upper portion thereof which is adjacent the top wall of the bolster and a lower portion thereof which is adjacent the bottom wall of the bolster; and



(d) means for maintaining a sideframe, rocking in a generally vertical plane, free of the upper portions of the outboard sidewalls, so that a rocking sideframe will contact the lower rather than the upper portions of the outboard walls, said means including outboard sidewalls wherein the upper portions thereof are recessed inwardly towards the longitudinal axis of the bolster a distance sufficient to keep a rocking sideframe from contacting the bolster in this area.

4,357,881

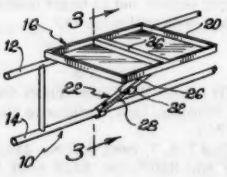
HOSPITAL BED TRAY

Harold D. De Long, 1483 Manzanita Ave., Escondido, Calif. 92027

Filed Nov. 3, 1980, Ser. No. 203,339

Int. Cl.³ A47B *23/02;* **A47C** *21/00*

U.S. Cl. 108—49 **1 Claim**



1. For a hospital bed having a siderail defining an upper rung and a lower rung, an accessory holder attachable to said rungs comprising:

(a) a tray having an inside edge;

(b) means adjacent the inside edge of said tray for clamping onto said upper rung;

(c) an elongated brace pivotally mounted at one end to said tray and having means at the other end to engage said lower rung and support said tray in generally horizontally extended position;

(d) said brace being telescoping to accommodate rails of different rung spacing;

(e) said means for clamping onto said upper rung clamping pivotally such that said tray may be swung down into a generally depending horizontal position when said brace is released from said lower rung;

(f) said tray defining a recessed channel in the lower surface thereof, and said brace is pivotally mounted in said channel such that same will swing into said recessed channel when not in use, and including means to retain same in said channel; and

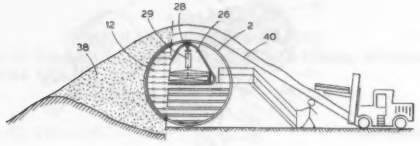
(g) said tray being formed generally as a sheet and said recessed channel in the bottom thereof forms a divider in the top thereof.

4,357,882

BUILDING FOR DETONATING EXPLOSIVES

Hans Hiorth, Lierbyen, Norway, assignor to Dyno Industrier A/S, Oslo, Norway

Filed Oct. 7, 1980, Ser. No. 195,212
Claims priority, application Norway, Oct. 26, 1979, 793457
Int. Cl.[3] E05G 1/02; E02D 27/00
U.S. Cl. 109—1 S 10 Claims



1. A building structure for recurrent detonation of explosive charges of up to several hundreds of kilos with the aim to obtain effective sound dampening and economical use of materials,

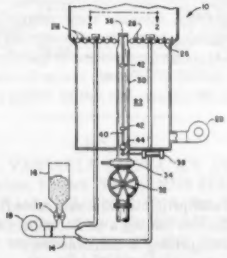
characterized therein that the building comprises, a tube shaped steel structure (2) with two gable walls (4,4) inside the tube and which defines an explosion chamber (6) in the centre portion thereof, one or both of said two gable walls being apertured by a plurality of through-going openings, and a webbed wall or the like (20) at least in one end portion of the tube which together with respective adjacent gable wall (4) defines at least one gable chamber (16), preferably being filled with a mass of stones (18), said structure being effective to obtain a sound dampened gas discharge and a pressure relief, said tube shaped steel structure being positioned horizontally and freely resting on a sand bed (36) and being covered along the entire length of the tube construction with sand (38).

4,357,883

BED DRAIN COVER ASSEMBLY FOR A FLUIDIZED BED

Joseph R. Comparato, Bloomfield, and Martin Jacobs, Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 10, 1981, Ser. No. 291,600
Int. Cl.[3] F23G 5/04
U.S. Cl. 110—245 3 Claims



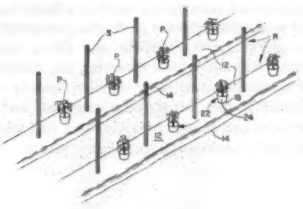
1. A furnace having a fluidized bed including a grate, means for introducing coal and limestone into the bed, means for introducing air through openings in an air register, said air being introduced in sufficient quantity and at such velocity to maintain continuous combustion of the coal and to fluidize the coal and limestone in the bed, a drain line through which ash and spent limestone can be gravity discharged from the bed while it is being operated, the drain line having an upper end opening above and closely adjacent to the grate, a valve rotatably positioned to open or close the upper end opening of the drain line, the valve being rotatable in a horizontal plane, actuator means which passes through the grate for actuating the valve from beneath the fluidized bed, air passage means surrounding the actuator means where it passes through the grate for keeping the actuator clean and cool, hood means attached to the actuator means just above the grate to prevent solids from jamming the actuator means, and a rotary lock means positioned in the lower portion of the drain line.

4,357,884

PLANT PROTECTION SYSTEM

Henry J. Rast, Jr., P.O. Box 444, Johns Island, S.C. 29455, assignor to Henry J. Rast, Jr., Johns Island, S.C.

Filed Aug. 25, 1980, Ser. No. 180,567
Int. Cl.[3] A01C 11/00; A01G 23/02
U.S. Cl. 111—2 14 Claims



1. The method of transplanting tender plant seedlings for subsequent growth in an open field subject to harsh seasonable environmental conditions wherein the field soil has been prepared to receive the seedlings comprising the steps of:

spreading a mulch layer of sheet material over the growing area of the field soil in which the plants are to be grown while exposed to open field environmental conditions;

forming a hole through said sheet material in said area and into the soil beneath said material at each of a plurality of spaced locations;

introducing a seedling and generally tubular open ended plant protector through said sheet material and into the soil at each of said holes for the protector to surround the seedling root formation at each of said locations thereby causing the surrounding soil to intimately contact the seedling root formation; and

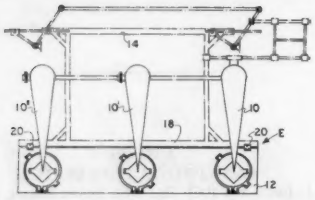
leaving an upper portion of each protector extending a substantial distance above said sheet material to protectively encircle the tender stem portion and at least a major part of the foliage of the seedling therewithin, causing said sheet material to closely surround the periphery of each said protector at the surface perimeter of each hole thereby enhancing the moisture content of said growing area.

4,357,885

FABRIC HOLDING DEVICE FOR MULTI-HEAD EMBROIDERY MACHINES

Allen L. Stockton, Burlington, N.C., assignor to Liberty Embroidery, Inc., Burlington, N.C.

Filed Aug. 12, 1981, Ser. No. 292,094
Int. Cl.[3] D05C 9/04
U.S. Cl. 112—103 6 Claims



1. A small fabric piece holding device for embroidery machines of the type having a plurality of heads, each head carrying an embroidery needle; at least one fixture mounted beneath said plurality of heads; means for guiding said fixture according to a prescribed embroidery pattern, a fabric holding means associated with each head for positioning small fabric pieces to the embroidery needle; wherein said fabric holding means comprises at least one female receiving seat in said fixture and a quickly releasable inner male member loosely held in unsecured relation to said female receiving seat, and registration means between said female receiving seat and said male member for properly positioning each fabric piece.

4,357,886

Patent Not Issued For This Number

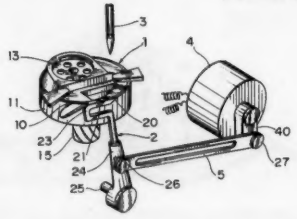
4,357,887

LOOP CATCHING DEVICE FOR LOCK STITCHING SEWING MACHINES

Kazumasa Hara, Tama, and Mikio Koike, Oume, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Japan

Filed Jun. 30, 1980, Ser. No. 164,028
Claims priority, application Japan, Jul. 4, 1979, 54-83956
Int. Cl.[3] D05B 3/02
U.S. Cl. 112—158 E 3 Claims

1. A loop catching device for a sewing machine having a machine frame, a main shaft rotatably mounted on the machine housing, a needle swingable laterally of the feeding direction and operatively connected to the main shaft and vertically reciprocated by rotation of the main shaft to penetrate a fabric to be sewn, said needle carrying an upper thread to provide a loop formed while the needle point is located below the fabric, comprising a loop taker carrying a lower thread and rotated in a timed relation with the vertical reciprocating movement of the needle to catch the loop provided by the needle, needle control means for swinging the needle laterally of the feeding direction; an electromagnetic pulse motor operated in a timed relation with the movement of the needle in accordance to a selected pattern; and looper means provided adjacently to the loop taker and reciprocatingly operated by the pulse motor in



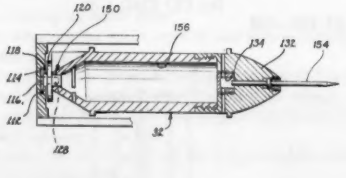
a time relation with the movement of the needle to catch the loop and hold the same for a predetermined time.

4,357,888

PROJECTILE FOR UNDERWATER FIREARM

John C. Phillips, 3148 S. 48th St., Phoenix, Ariz. 85040, and Michael D. Nobel, 3525 E. Montecito Ave., #3, Phoenix, Ariz. 85018

Division of Ser. No. 4,548, Jan. 18, 1979, Pat. No. 4,266,358.
This application Nov. 3, 1980, Ser. No. 203,313
Int. Cl.[3] F42B 19/00
U.S. Cl. 114—20 R 3 Claims



1. An underwater projectile dischargeable from an underwater hand-held firearm having a projectile retaining guideway, said projectile comprising in combination:

(a) a body having a war head, a chamber and a rear end in serial longitudinal alignment;

(b) means for detachably attaching said war head to said chamber;

(c) a propellant disposed in said chamber for propelling said projectile through the water;

(d) means disposed in said rear end for activating said propellant on firing of the firearm;

(e) fracturable flange means secured to said rear end for engaging the guideway within the firearm to retain said projectile within the firearm until said propellant is activated; and

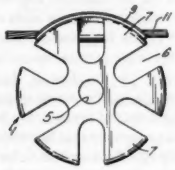
(f) an annular flange disposed at said rear end, said flange being displaced along the longitudinal axis of said projectile for cooperating with said fracturable flange to retain the guideway therebetween.

4,357,889

SAIL HANDLING APPARATUS

Alan W. Tupper, The Weavers House, Castle Combe, Wiltshire SN14 7HX, England

Filed Apr. 3, 1981, Ser. No. 250,719
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—114 **10 Claims**



1. Sail handling apparatus comprising:

a. an elongate element extending along a boom and/or a mast;

b. support means to fixedly locate the elongate element to the boom and/or mast at the ends of the elongate element and at a plurality of intermediate positions spaced along the length of the elongate element to hold the elongate element firmly in position along the boom and/or mast in a generally parallel spaced apart relation thereto;

c. a sail having a plurality of traversing devices fixed at spaced locations along at least one edge thereof to cooperate with the elongate element for moving past said support means at least at said intermediate positions, each traversing device comprising:

i. at least one rotatable wheel formed with evenly spaced recesses in its periphery, the recesses being separated by respective projecting parts of the wheel;

ii. a guide member which is supported at a peripheral part of the wheel and is located between the elongate element and the associated boom or mast for sliding movement along the elongate element, the projecting parts of the wheel and the guide member having cooperating relatively rotatable surfaces to allow the wheel to rotate about its axis with respect to the guide member when said support means are received in a recess in the wheel and while the elongate element remains located with respect to the wheel by the guide member; and

d. means for moving the traversing devices in both directions along the elongate element to deploy the sail therealong and to gather in the sail, respectively.

4,357,890

STABILIZED, VARIABLE BUOYANCY APPARATUS

Douglas E. Anderson, Horley, Surrey, RH6 8DH, England

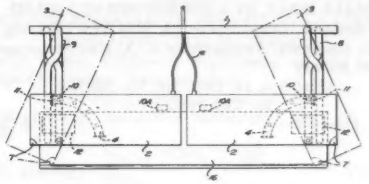
Division of Ser. No. 82,153, Oct. 5, 1979, Pat. No. 4,276,846, which is a continuation of Ser. No. 850,047, Nov. 9, 1977, abandoned. This application Mar. 31, 1981, Ser. No. 249,437
Int. Cl.³ B63B *43/14*
U.S. Cl. 114—123 **8 Claims**

1. An adjustable buoyancy apparatus having improved stability against rolling, comprising:

a frame;

at least two floatable members having longitudinal axes and having means for varying the buoyancy thereof;

coupling means, pivotally connecting said floatable members to said frame, for controlling pivoting motion of said floatable members in a substantially vertical plane between horizontal positions and maximum elevated positions, in said maximum elevated positions angles between said longitudinal axes and the horizontal are less than 90



degrees and said floatable members are inclined upwardly toward each other; and

floatable member locking means for holding each of said floatable members at least in said horizontal and maximum elevated positions;

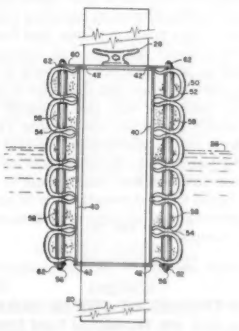
whereby said floatable members are arranged on said frame to compensate for rolling tendencies of the apparatus and to stabilize the apparatus when the apparatus is at least partially submerged.

4,357,891

FLOATING MOORAGE DEVICE FOR USE WITH PILES OR DOLPHINS

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Nov. 15, 1979, Ser. No. 94,669
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—230 **6 Claims**



1. A mooring device for use with a pile projecting upwardly in a body of water, said device comprising:

an inner shell adapted to surround said pile, said inner shell having an inside dimension which is sufficiently larger than the diameter of said pile so that said inner shell can loosely slide on said pile;

a float surrounding said shell having sufficient buoyancy to allow said device to float on the surface of said water, said float being formed by a plurality of axially stacked tires concentrically secured to said inner shell by connecting means, said tires being filled with a buoyant material, said connecting means including an annular plate surrounding the upper edges of said inner shell and overlapping the upper side wall of the uppermost tire, said connecting means further including a plurality of circumferentially

spaced, elongated fastening members extending through said tires from said annular plate; and

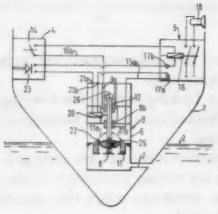
mooring means for securing a line extending from a vessel to said device such that said lines may remain taut as said vessel is raised and lowered responsive to tidal action.

4,357,892

APPARATUS FOR WARNING OF THE INCREASE IN DRAUGHT OF A FLOATING ARTICLE, ESPECIALLY A SMALL BOAT, IN A SURROUNDING LIQUID

Gunnar Sveinsbo, Gravdalsveien 10, 5034 Ytre Laksevag, and Jan E. Gismervik, Knappenveien 62 A, 5064 Straumsgrend, both of Norway

Filed Nov. 14, 1980, Ser. No. 208,763
Int. Cl.³ B63B *39/12*
U.S. Cl. 114—270 3 Claims



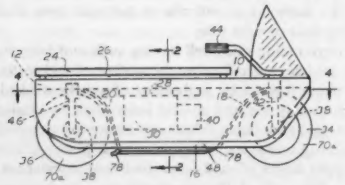
1. Apparatus for warning of the increase in draught of a floating article in a surrounding liquid which comprises signal emitting means, current source means, release unit means connected to said signal emitting means and said current source means via relay means and current switch means, said release unit means comprising a chamber fixedly arranged relatively to said article and communicating with said surrounding liquid, said chamber holding a contact means adapted to close an electrical circuit when said liquid has risen to a certain level in said chamber thereby activating said signal emitting means, said contact means being housed in first float means housed by said chamber, the height position of said first float means being adjustable by respectively releasing and clamping a float rod regulatively fixed to said chamber, said first float means thus being locked in position when said float rod is clamped so that said apparatus is ready for use, said chamber incorporating electromagnet means connected via impulse switch means to said current source means, energization of said electromagnet means by closing said impulse switch means causing said float rod to be released enabling said float means to adjust itself to the level of the liquid while deenergization of said electromagnet means by opening said impulse switch means causes said float rod to be clamped.

4,357,893

ALL-TERRAIN VEHICLE OF THE MOTORCYCLE TYPE

Norman V. Frye, R.R. #4, Davenport, Iowa 52804

Filed Oct. 3, 1980, Ser. No. 193,678
Int. Cl.³ B63B *1/32*
U.S. Cl. 114—288 2 Claims



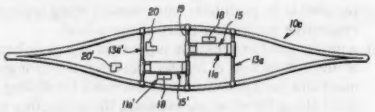
1. A vehicle having a fore-and-aft body including a top, opposite side sheets and front and rear fender wells joined together to form a downwardly opening air compartment wherein the side sheets terminate respectively as fore-and-aft runners, front and rear wheel means respectively in the fender wells and carrying the body, and a power source within the compartment and driving both wheel means, characterized in that the front fender well has a depending, lower rear edge portion directed downwardly and then rearwardly beneath the front edge of the air compartment, the rear fender well has a depending, lower front edge portion directed downwardly and then rearwardly of the rear edge of the air compartment, said edge portions depend to a level below that of the fore-and-aft runners, and at least an additional fore-and-aft runner is joined to and extends between the depending portions, each wheel means has a water-engaging tread portion comprising at least a pair of annular rows of radial, circumferentially spaced apart fins, each fin in each row being directed both axially and circumferentially of the wheel means so as to slant axially inwardly and counter to the direction of the wheel means when the vehicle travels forwardly, the inner ends of the fins in each row terminating short of the fore-and-aft median plane of the wheel means so as to leave an annular space between the rows whereby water engaged by the fins is directed oppositely axially inwardly to the space, the water engaged by the front wheel means fins being directed rearwardly beneath the aforesaid depending rear edge portion and beneath the air compartment for exerting a lifting effect on the vehicle and the water engaged by the rear wheel means is directed rearwardly away from the air compartment.

4,357,894

CANOE SEAT CONSTRUCTION

Johnny Kirk, Rte. 1, Box 312, Hinton, W. Va. 25951

Filed Sep. 11, 1980, Ser. No. 186,132
Int. Cl.³ B63B *17/00*
U.S. Cl. 114—347 8 Claims



1. A canoe seat construction, comprising:

a canoe having gunwales;

a subframe extending across the width of the canoe and removably mounted on the gunwales of the canoe wherein the subframe includes a canoe center brace extending transversely of the canoe at the center thereof;

a seat frame adjustably movably supported on the subframe for movement transversely of the canoe;

a contoured seat adjustably movably carried by the seat frame for movement longitudinally of the canoe wherein a plurality of seats are provided, including at least one on each side of the center brace, with adjacent ends of the seats supported on the center brace; and

fastening means for releasably securing the seat frame and seat against movement in their adjusted positions, said seat being supported near the center of the canoe to concentrate weight near the center of the canoe and enhance planing of the canoe on the water and also to position a paddler for maximum effectiveness in paddling.

4,357,895

TENNIS AID

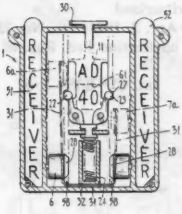
Gerry Nightingale, 6 Glencara St., Avondale Heights, 3034, Victoria, Australia

Filed Jun. 11, 1980, Ser. No. 158,569

Claims priority, application Australia, Jun. 11, 1979, PD9143

Int. Cl.³ A63B 71/06

U.S. Cl. 116—225 11 Claims



1. A tennis scoring aid comprising a board having a front face and a rear face, said front face having two transversely extending paths formed therein, said paths each having a scoring marker disposed therein, said scoring markers having protuberances extending therefrom and being slideably movable within said paths whereby a given score of a team or player can be indicated by the position of the marker within the path; and a scoring means having at least one pawl extending therefrom said means positioned between said paths and actuated by the engage- of said pawls with the protruberances of said scoring markers.

4,357,896

ADHESIVE APPLICATOR

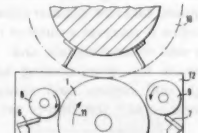
Richard Feldkämper, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmöller & Hölscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,670

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948745

Int. Cl.³ B05C 1/08

U.S. Cl. 118—262 8 Claims



1. An adhesive applicator comprising a reservoir having bottom, rear, and side walls, and an open front; an upright mounted adhesive roller positioned so as to close a central portion of the front of the reservoir, gaps being defined between a circumferential surface of the adhesive roller and the side walls of the reservoir; rotary drive means for rotating said adhesive roller; and sealing means disposed in the gaps between the adhesive roller and the side walls for sealing the gaps comprising rotatable rollers for sealing first portions of the gaps and having axes extending parallel to an axis of the adhesive roller and being positioned with respect to the surface of the adhesive roller to form adhesive penetrating gaps therebetween, the rotatable rollers being drivable in opposite directions so that parts of the rotatable rollers confronting the adhesive roller move towards the interior of the reservoir, the circumferential speed of one of the rotatable rollers turning opposite to the adhesive roller being higher than the circumferential speed of the adhesive roller; and doctors secured to said side walls for sealingly engaging the rotatable rollers to thereby seal second portions of said gaps located between said side walls and said rotatable rollers.

4,357,897

DEVICE FOR EPITAXIALLY PROVIDING A LAYER OF SEMICONDUCTOR MATERIAL

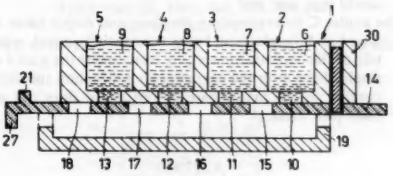
Willem J. Leswin, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, Tarrytown, N.Y.

Filed Jan. 12, 1981, Ser. No. 224,581

Claims priority, application Netherlands, Jan. 16, 1980, 8000256

Int. Cl.³ H01L 21/208

U.S. Cl. 118—412 9 Claims



1. A device for epitaxially providing at least one layer of semiconductor material on at least one semiconductor substrate, the device having a reservoir holder which contains at least one reservoir open along a lower surface thereof, a slider which has at least one aperture through it and is movably mounted along the lower surface so as to enable each reservoir to be selectively uncovered therealong to allow semiconductor melt in each reservoir to pass through each aperture, a substrate holder which has at least one recess for receiving at least one semiconductor substrate and is movable with respect to both the slider and the reservoir holder such that each recess is placeable below each aperture, and means below the reservoir holder and separate from the substrate holder for receiving semiconductor melt from each aperture when it is uncovered by sufficient movement of the substrate holder, characterized by means for selectively locking the slider to the reservoir holder at at least one substantially fixed position.

4,357,898

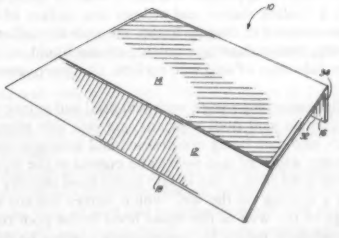
CARPET SHIELD

Daniel R. Fehrenbacher, 6420 W. VanBuren, Space D19, Phoenix, Ariz. 85043

Filed Mar. 12, 1981, Ser. No. 242,893

Int. Cl.³ B05C 11/00

U.S. Cl. 118—504 2 Claims



1. A shield for protecting the pile of carpeting while painting

or staining adjacent surfaces of adjoining walls, said shield comprising:

a substantially planar substantially isosceles trapezoidal guard having two sides, a major base, and a minor base;

a substantially planar substantially isosceles trapezoidal platform having two sides, a major base and a minor base, said platform extending at an angle A from said guard with the minor base of the guard substantially coinciding with the major base of the platform;

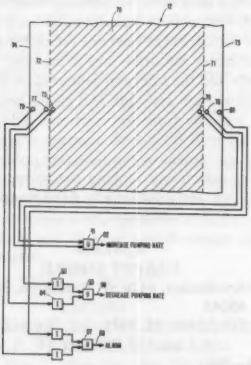
a substantially planar and substantially rectangular runner having two bases and two sides, said runner extending at an angle B from the platform with one of the bases of said runner substantially coinciding with the minor base of said platform, said guard and said runner being dimensioned so that the free base of the runner is substantially parallel to the major base of the guard and the platform is substantially parallel to a plane determined by the major base of the guard and the free base of the runner, substantially only the major base of the guard and the free base of the runner are adapted to contact the carpeting when the shield is in use; and

the angles C determined by the sides and major bases of the guard and the platform being substantially equal, whereby pile of the carpeting emerging from under the guard as the shield slides over the carpeting in a direction substantially parallel to the major base of the guard does not spring back past vertical.

4,357,899
COATING APPARATUS

Dennis P. Jones, Tucson, Ariz., and David J. Pipkin, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,243
Int. Cl.³ B05C *3/18*
U.S. Cl. 118—665 **13 Claims**



1. In a coating apparatus whereat a web of material passes through a coating station and at least one surface of the web encounters a pool of coating liquid, the web thereafter leaving the coating station bearing a coating of said liquid on all but at least one side edge of said web surface, the improvement comprising:

a wall member associated with said pool and acting as a dam to contain said pool adjacent said one side edge of said web, said dam being constructed and arranged to allow a greater width of said web to be coated as the liquid level in the pool rises, a rise in said liquid level thereby producing a coating on the web which moves toward said side edge of the web as the liquid level in the pool rises;

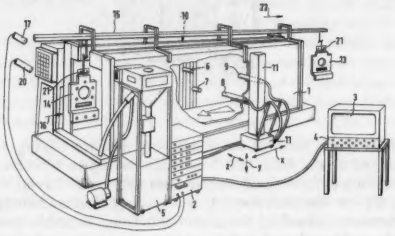
replenishment means for replenishing coating liquid to said pool; and

sensing means associated with said web downstream of the coating station, said sensing means being responsive to the position of the coating relative said side edge of the web, and being connected to control said replenishment means.

4,357,900
APPARATUS FOR THE AUTOMATIC COATING OF ARTICLES

Karl Buschor, St. Gallen, Switzerland, assignor to Gema AG Apparatebau, Switzerland

Filed Apr. 3, 1981, Ser. No. 250,656
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014114
Int. Cl.³ B05B *5/02*
U.S. Cl. 118—681 **25 Claims**



1. An apparatus for the automatic spray-coating of an object while the object is in a predetermined spray-coating region, comprising:

conveyor means for conveying said object along a predetermined path and through a predetermined spray-coating region;

first sensor means for generating a first signal when said object is located at a predetermined point along said path and upstream of said region;

second sensor means for generating a series of second signals at a frequency related to the speed at which said conveyor means moves said object along said path;

a programmed control means for generating a sequence of control signals responsive to said first signal and determinative of a spraying operation sequence;

first counter means receiving both said second signals and said control signals, said first counter means generating an output signal when it receives a number of second signals determined by said control signals; and

spray-coating means for spray-coating said object as it moves through said region, said spray-coating means varying its operation as a function of said output signal.

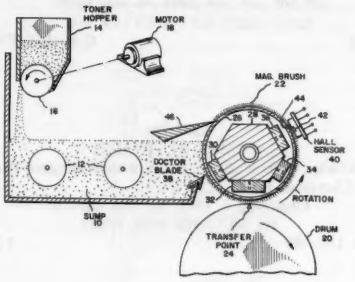
4,357,901
METHOD AND SYSTEM FOR MAGNETICALLY SENSING AND CONTROLLING TONER CONCENTRATION AND OPTICAL DENSITY OF COPIES IN ELECTROSTATIC REPRODUCTION

Ben W. Fagen, Jr., and Dale B. Parks, both of Rochester, N.Y., assignors to Bunnington Corporation, Rochester, N.Y.

Filed Sep. 3, 1981, Ser. No. 299,252
Int. Cl.³ G03G *21/00*
U.S. Cl. 118—689 **17 Claims**

1. The method for controlling the ratio of the non-magnetic toner to the magnetic carrier of the developer used in electrostatic reproduction of images which comprises the steps of deriving a signal which represents both the absolute value of said ratio and the amount of toner used for each of said images, and replenishing the amount of toner in said developer in response to said signal whenever said absolute value decreases below a predetermined value and at a rate corresponding to said amount.

8. A system for controlling toner concentration in a developer having a magnetic carrier and a non-magnetic toner which is carried in the form of a magnetic brush and transferred onto an electrostatic image bearing surface which comprises means for deriving a first signal having a magnitude which corresponds to said concentration and which varies in



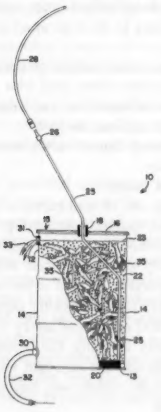
accordance with the amount of said toner transferred to said electrostatic image, and means for supplying toner to said developer when said first signal reaches a magnitude corresponding to said concentration being below a predetermined concentration and at a rate which varies with the magnitude of said signal.

4,357,902

SYSTEM FOR HOLDING AND TRANSPORTING LOBSTERS

William W. Sheldon, R.F.D. #2, Box 292, Ellsworth, Me. 04605, and Theodore G. Axford, Milbridge, Me., assignors to William W. Sheldon, Marlboro, Me.

Filed Jul. 20, 1981, Ser. No. 284,629
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—2 **31 Claims**



1. A container for bulk handling, transporting and unloading lobsters or other marine organisms immersed in an aerated water environment comprising:

drum housing means formed with water tight base and side walls, and removable cover means formed with a vent hole, said drum housing means formed without compartments or subdivisions for filling said drum housing means with lobsters or other marine organisms in close proximity immersed in sea water, said drum housing means constructed and operatively arranged for individual handling and transport by vehicles and for unloading by upending and dumping;

low pressure air diffuser means mounted in said drum housing means at the base for releasing diffuse low pressure air into sea water contained in the drum housing means;

air coupling means for delivering low pressure air to the diffuser means, said air pressure sufficiently low to avoid supersaturation of the water;

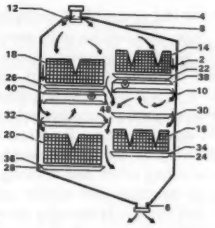
said drum housing means also formed with inlet opening and outlet opening at respective spaced apart location, said openings formed with fitting means for coupling and circulating sea water through said drum housing means.

4,357,903

DEVICE FOR PRODUCING A FLUID STREAM OF VARYING COMPOSITION

Owen R. Moss; Mark L. Clark, both of Kennewick, and E. John Rossignol, Richland, all of Wash., assignors to Hazleton Systems, Inc., Aberdeen, Md.

Filed May 22, 1981, Ser. No. 266,540
Int. Cl.³ A01K *1/03*
U.S. Cl. 119—15 **18 Claims**



4. An exposure chamber comprising:

(a) imperforate substantially vertical front, rear and sidewalls and closed upper and lower ends;

(b) a gas inlet in one of said ends;

(c) a gas outlet in the other of said ends;

(d) an inlet deflector adjacent said inlet constructed and arranged to deflect gas introduced at said inlet toward substantially vertical walls;

(e) a plurality of imperforate substantially horizontal pans within said chamber, said pans being arranged in pairs vertically spaced from each other, the pans of each pair being horizontally spaced from each other by a distance which is sufficient to exhaust air from said pair and the pans upstream of them, but which is small compared to the horizontal dimensions of said pans, said pans including an initial pair adjacent said inlet, a terminal pair adjacent said outlet and at least one intermediate pair, each of the pans except those of said terminal pair being spaced from said vertical walls by distances which are sufficiently large to supply sufficient gas to pans downstream of it, but which are small compared to the horizontal dimensions of said pans;

(f) means constructed and arranged to prevent substantial flow of gas between said vertical walls and the pans of said terminal pair;

(g) support means of open structure above at least some of said pans other than those of one intermediate pair;

(h) means for introducing gas of a first composition at said inlet; and

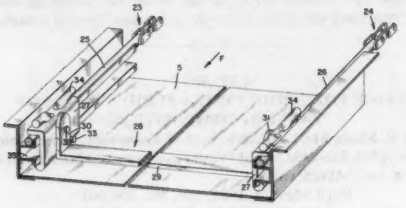
(i) means for introducing gas of a second composition, different from said first composition, to the space between each of the pans of said one intermediate pair and the pan just above it, said space being otherwise substantially unobstructed.

4,357,904

CONVEYOR FOR THE REMOVAL OF DROPPINGS FOR BATTERY-DESIGNED POULTRY CAGE INSTALLATIONS

Josef H. Kuhlmann, Konigstrasse 41, D-4401 Laer, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,962
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1980, 3021860
Int. Cl.³ A01K *31/04*
U.S. Cl. 119—22 4 Claims



1. A conveyor for the removal of droppings for battery-designed poultry cage installations with seat gratings above dropping pans over which a conveyor travels comprising:

a drawing device carrying scraper bars attached thereto, return rollers on which said drawing device is guided;

swivel shaft means aligned perpendicularly to the direction of travel of the drawing device for attaching said scraper bars to said drawing device so that said bars will be prevented from swiveling when said drawing device is moving in a reverse direction and so that said bars will be allowed to swivel when said drawing device is moving in a forward direction thereby allowing said bars to pass over accumulations on said dropping pans;

said scraper bars having a first portion affixed to said swivel shaft means and a second portion extending orthogonally from said first portion, said second portion having top and bottom parallel planar surfaces and a front and rear surfaces substantially parallel to each other and orthogonal to said top and bottom surfaces;

said bottom surface being disposed adjacent said pans when said device is moving in the reverse direction, and

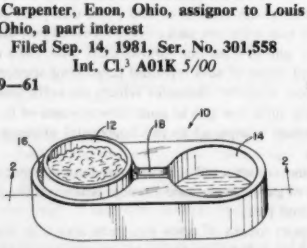
said front and rear surfaces being thinner than said top and bottom surfaces.

4,357,905

MOATED PET FEEDER

Robert W. Carpenter, Enon, Ohio, assignor to Louis E. Hay, Dayton, Ohio, a part interest

Filed Sep. 14, 1981, Ser. No. 301,558
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—61 4 Claims



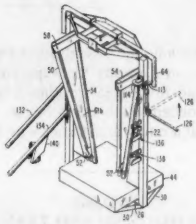
1. A moated pet feeder comprising: a unitary structure having a food bowl, a water bowl, a moat cavity surrounding said food bowl with the upper edges of said moat cavity and the upper edges of said water bowl on a substantially common horizontal plane, and a substantially horizontal flow passage connecting said moat cavity to said water bowl for flowing water from said water bowl into said moat cavity to form a moat around said food bowl.

4,357,906

ANIMAL RESTRAINT

Frank Kratky, Bellvue, Colo., assignor to Westguard Products, Inc., Cheyenne, Wyo.

Filed Aug. 3, 1981, Ser. No. 289,729
Int. Cl.³ A01K *1/06, 1/062*
U.S. Cl. 119—98 7 Claims



1. An animal restraint comprising:

a pair of generally-upright elongated pipes spaced apart somewhat greater than the width of an animal to be restrained;

means for mounting said pipes to permit rotation of each pipe about its longitudinal axis, said mounting means orienting said pipes to diverge apart in the upward direction;

a first spur gear mounted on one of said pipes near one end thereof;

a second spur gear mounted on the other of said pipes near a corresponding one end thereof;

said spur gears being canted downwardly and outwardly from one another;

a pair of elongated tubes;

means for securing one of said tubes to one of said pipes in generally-parallel-spaced relationship;

means for coupling the other of said tubes to the other of said pipes in generally parallel-spaced relationship and with the upper end portion of said other tube being movable toward and away from said other pipe;

means for urging said upper end away from said other pipe;

means for releasably latching the assemblies of the other ends of said pipes and the adjacent ends of said tubes in a closed condition in which said tubes are positioned between said pipes;

a pair of idler gears disposed between said spur gears, with one of said idler gears meshed with said first spur gear and the other of said idler gears meshed with said second spur gear and with said idler gears being mutually intermeshed, for slaving each of said pipes to the other in rotation;

each of said idler gears being rotatable about a vertical axis with the axes of rotation of said spur gears being tilted with respect to the vertical direction;

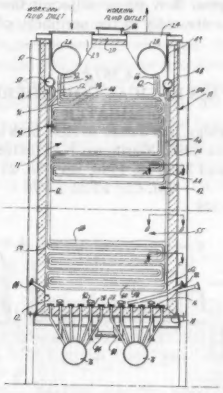
and a spring effectively coupled between said pipes for biasing said pipes rotationally toward said closed condition.

4,357,907

FLUIDIZED BED COMBUSTOR WITH IMPROVED INDIRECT HEAT EXCHANGER UNITS

John Campbell, Jr., Woodland Hills; Larry H. Russell, Agoura, and Philip I. Robinson, Calabasas, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 27, 1980, Ser. No. 200,751
Int. Cl.[3] F22B *1/02*; F23D *19/02*
U.S. Cl. 122—4 D 10 Claims



1. A fluidized bed combustor comprising:

(a) an insulated combustion chamber comprising an upper interior portion and a lower interior portion and having an interior surface and a removable lid, said lower interior portion for containing a fluidized bed of combustible particulate carbonaceous fuel;

(b) a fluid inlet conduit extending from at least the lid downwards into said upper interior portion of the combustion chamber;

(c) a fluid inlet manifold contained within the upper interior portion of and adjacent the interior surface of the combustion chamber, said fluid inlet manifold secured to and in flow communication with said fluid inlet conduit;

(d) a fluid outlet conduit extending from within the upper interior portion of the combustion chamber at least to said lid;

(e) a fluid outlet manifold contained within the upper interior portion of and adjacent the interior surface of the combustion chamber, said fluid outlet manifold secured to and in flow communication with said fluid outlet conduit;

(f) a first intermediate manifold secured to the lid and contained in the upper interior portion of the combustion chamber adjacent the interior surface thereof and substantially parallel to said inlet and outlet manifolds;

(g) a second intermediate manifold secured to the lid and contained in the upper interior portion of the combustion chamber adjacent the interior surface thereof and positioned substantially parallel to said inlet and outlet manifolds;

(h) an economizer contained in the upper interior portion of said combustion chamber and formed of a plurality of first indirect heat exchange conduits and second indirect heat exchange conduits alternately spaced from the first indirect heat exchange conduits in substantially parallel relation, said first indirect heat exchange conduits coupled in flow relation to said fluid inlet manifold and said first intermediate manifold, said second indirect heat exchange conduits coupled in flow relation to said fluid inlet manifold and said second intermediate manifold;

(i) a plurality of first downcomers coupled in flow relationship to and extending downwards from said first intermediate manifold adjacent the interior surface of the combustion chamber and into the lower interior portion thereof;

(j) a plurality of second downcomers coupled in flow relationship to and extending downwards from said second intermediate manifold adjacent the interior surface of the combustion chamber and into the lower interior portion thereof;

(k) a plurality of third indirect heat exchange conduits alternatively spaced from a plurality of fourth indirect heat exchange conduits in substantially parallel relation, the third and fourth heat exchange conduits suspended within the lower interior portion of said combustion chamber in spaced relation to the interior surface thereof, the third heat exchange conduits coupled in flow communication to said first downcomers and by first risers to said fluid outlet manifold, said fourth heat exchange conduits coupled in flow communication with said second downcomers and by second risers to said fluid outlet manifold;

(l) means for introducing a particulate carbonaceous fuel to said lower interior portion of the combustion chamber;

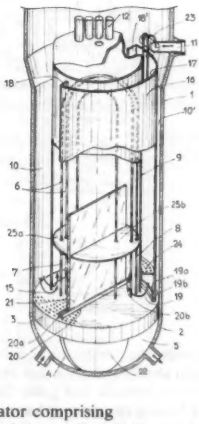
(m) means for introducing air to said lower interior portion of said combustion chamber.

4,357,908

STEAM GENERATOR WITH PRE-HEATING

Jean-Claude Yazidjian, Bougival, France, assignor to Framatome, Courbevoie, France

Filed Feb. 19, 1981, Ser. No. 235,882
Claims priority, application France, Feb. 29, 1980, 80 04533
Int. Cl.[3] F22B *1/02*
U.S. Cl. 122—32 12 Claims



1. Steam generator comprising

(a) a pressure resistant, cylindrical outer vessel with a vertical axis;

(b) an upper dome and a lower dome closing said vessel at each end thereof;

(c) a horizontal tubular plate arranged inside said vessel, fast to the latter and defining with said lower dome a chamber separated into an intake manifold and a discharge manifold, respectively, for heat transfer primary fluid;

(d) a bundle of U-tubes mounted on said tubular plate, each having a hot limb which communicates with said intake manifold and a cold limb which communicates with said discharge manifold, the group of hot limbs constituting a hot arm and the group of cold limbs constituting a cold arm;

(e) a secondary envelope engirdling said tube bundle without being supported on said tubular plate and defining an annular space with said outer vessel;

said intake device for feeding said annular space with sec-

ondary water intended to reascend along tubes of said bundle and to be vaporized on contact therewith; and,

(g) in the upper portion of said vessel, a group of separators and an opening formed in said upper dome for the removal of the steam produced;

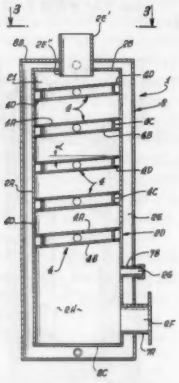
(h) said steam generator being separated into a cold arm zone and a hot arm zone, the separation being effected inside said secondary enevelope by a vertical partition separating said hot limbs from said cold limbs, and outside said secondary envelope by a skirt encircling a portion of said secondary envelope on the side of said cold arm and constituting with said envelope line a spaced closed on the sides and at its lower portion, while leaving a passage to said cold arm zone from the inside of said envelope, and open at its upper portion, so that the secondary water recycled after passage in said separator can return to said bundle of U-tubes through both said cold arm zone and said hot arm zone, but that the secondary feed water, arriving through said intake device situated at the upper portion of said generator, flows for the essential part of its flow, in said cold arm zone.

4,357,909

FLUID HEATER WITH SPIRAL HOT GAS FLOW

Takashi Kagoshima, 5 Kita 7 Chome, Higashi 1 JYO, Sunagawa City, Hokaido, Japan

Filed Feb. 13, 1981, Ser. No. 234,383
Int. Cl.³ F22B *7/04*
U.S. Cl. 122—183 **1 Claim**



1. In a fluid heater, the combination comprising

(a) a first upright shell having a lower interior in which fuel is combusted to produce hot gases that rise in the shell interior, and having an upper exhaust vent,

(b) a series of like hollow, generally flat discs arranged generally vertically in the shell interior, with spaces between the entireties of all the discs and the shell inner wall to pass the hot gases upwardly,

(c) the discs tilted from horizontal and in multiple azimuthal directions, the discs having fluid inlets and outlets, and

(d) means to pass fluid through the discs via said inlets and outlets, for heat transfer to the fluid in the discs, said means comprising fluid passing tubes that also support the discs, the tubes supported by the shell, the tubes located radially outwardly of the discs,

(e) there being three of said tubes for each disc and spaced thereabout, two of the three tubes being inlet tubes located at the same lower elevation and the third tube being an outlet tube located at a relatively higher elevation, the third tubes for the multiple discs being circularly staggered about an upright axis passing through the heater, whereby the hot gases are caused to flow upwardly between and around the edges of the tilted discs in a swirling zig-zag manner, the three tubes for each disc being equally spaced about said axis, all the flat discs tilted at about 5° from horizontal,

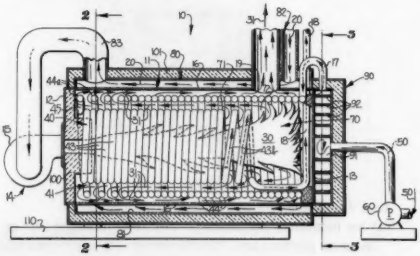
(f) all three tubes for each tilted disc being everywhere in the same tilted plane as defined by the flat disc, there being an outer shell surrounding the first shell and spaced therefrom to form an annular fluid chamber therebetween, all the tubes communicating with said chamber which has a lower fluid inlet and an upper fluid outlet whereby said hot gas spiral flow passes adjacent the inner side of the first shell outwardly of the periphery of each tilted disc.

4,357,910

MULTI-PASS HELICAL COIL THERMAL FLUID HEATER

Eugene T. Blockley, and James A. Bell, both of 640 Sam Newell Rd., P.O. Box 1395, Matthews, N.C. 28105

Filed Nov. 28, 1980, Ser. No. 211,442
Int. Cl.³ F22B *37/10*
U.S. Cl. 122—248 **10 Claims**



1. A multi-pass helical coil thermal fluid heater comprising

an elongate body having opposing first and second end walls and having an elongate combustion chamber therein and an exhaust exit communicating with the combustion chamber for discharge therefrom of the products of combustion,

a combustible fluid jet burner supported on said first end wall of said body and including means for supplying a relatively high rate stream of combustion air for effecting the desired combustion and wherein the flame of combustion extends from the burner substantially to said opposing second end wall and is of an expanded cross section adjacent said second end wall,

first and second heat transfer units each comprising a helically arranged coil of tubing communicating with each other and substantially concentrically arranged within said body with said first helical coil disposed within said second helical coil and with said coils being in radially spaced relation to each other and in radially spaced relation to the interior of the body and cooperating with each other and the interior of the body so as to define a sinuous heat flow passageway for hot combustion gases being discharged from the exhaust exit,

means for circulating a heat transfer fluid through said first and second helical coils,

said first helical coil serving to define a substantial first portion of the combuston chamber and having its coils extending outwardly from adjacent said first end wall of said body toward said opposing second end wall and terminating at a location which is spaced from said second end wall a distance of at least 20% of the overall distance between said first and second end walls,

said second helical coil being positioned to surround at least substantial portions of said first helical coil and extending beyond the terminal end of said first helical coil to adjacent the second end wall so as to define an enlarged cross sectional area second portion of the combustion chamber

of at least about 20% of the overall length of the combustion chamber whereby direct contact between the expanded flame area and the smaller size first helical coil adjacent said second wall is substantially avoided so as to prevent deleterious overheating of the heat transfer fluid circulating therethrough, and

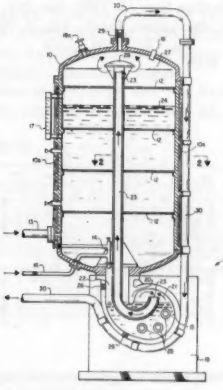
wherein at least the last two turns of the terminal end of the first helical coil are spaced apart from one another and from the remaining turns of the first coil a predetermined distance, and wherein at least the first two turns of the second helical coil adjacent the first end wall are also spaced apart from one another and from the remaining turns of the second coil a predetermined distance so as to provide for thermal expansion of said coils and also to provide communication of flow of the hot combustion gases from between the first and second helical coils into and between the second helical coil and the interior of said body, to thereby facilitate in defining the sinuous heat flow passageway for the hot combustion gases.

4,357,911

RAPID RECOVERY HOT WATER BOILER

Byron J. Sessions, 4939 Havasu Way, Salt Lake City, Utah 84120

Filed Dec. 29, 1980, Ser. No. 221,350
Int. Cl.³ F22D *1/28*
U.S. Cl. 122—441 **6 Claims**



1. An apparatus for generating steam, comprising in combination:

water holding tank means;

steam generation means disposed below said water holding tank means, said steam generation means having a water reservoir and hollow cavity means above said reservoir for receiving and holding steam generated within said reservoir;

water feed means for alternatively introducing water into said steam generation means from said water holding tank means and from an outside water source;

heating means disposed below and in communication with said water reservoir; and

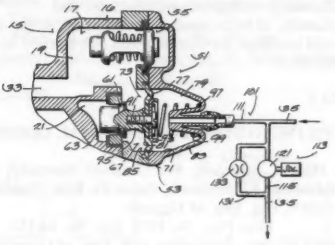
a steam pipe extending from said cavity means upward through said water-holding tank for heating the water in said holding tank and for removing the steam from said cavity means.

4,357,912

ENGINE COOLING SYSTEM

Peter W. Brown, North Muskegon, Mich., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 12, 1980, Ser. No. 206,019
Int. Cl.³ F01P *7/14*
U.S. Cl. 123—41.08 **14 Claims**



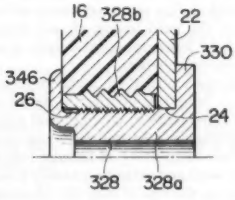
6. An internal combustion engine comprising a coolant jacket including an inlet portion and a second portion, pressure actuated valve means including a valve port communicating between said inlet portion and said second portion of said coolant jacket, a valve member movable relative to said valve port between open and closed positions, means subject to the application of pressure independent of the coolant pressure in said inlet portion for effecting movement of said valve member between said open and closed positions, and means for selectively applying pressure to said means for effecting movement of said valve member.

4,357,913

MULTIBLADE PLASTIC FAN

Takanobu Hori, Toyotashi, and Motoharu Yoshida, Ichinomiyashi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariyashi, Japan

Filed Apr. 4, 1980, Ser. No. 137,261
Claims priority, application Japan, Apr. 7, 1979, 54-42132
Int. Cl.³ F01P *7/10*
U.S. Cl. 123—41.49 **3 Claims**



1. A multiblade fan assembly driven by an output member of an internal combustion engine of an automotive vehicle comprising:

a hub portion formed of molded plastic;

a plurality of blades extending radially outwardly from said hub portion;

a boss projecting radially inwardly from said hub portion and having a plurality of axial holes formed therein, said blades and said boss being integral with said hub portion;

an annular spacer member having a plurality of axial holes formed therein;

a plurality of bushings inserted in said holes of said boss and also in said holes of said spacer member, said spacer member being integrally fixed to said bushings, wherein each of said bushings further comprises a flange at a first end thereof interposed between one side of said boss and said

output member, an outwardly deformed portion at a second end thereof for engaging the other side of said boss, and a knurled portion over at least part of the outer periphery thereof for engaging the bore of said holes of said boss, wherein said spacer member is interposed between said flange of said bushing and one side of said boss and wherein said spacer member further comprises a spacer member integrally fixed to said bushings by means of shrinkage fitting on said bushings; and

a plurality of bolts passing through said output member and said bushings for securing said hub portion to said output member.

4,357,914

COOLING SYSTEM FOR INTERNAL COMBUSTION ENGINES

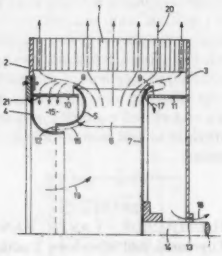
Kurt Hauser, Stuttgart, Fed. Rep. of Germany, assignor to Süddeutsche Kühlerfabrik, Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,154

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849675

Int. Cl.³ F01D *7/10*

U.S. Cl. 123—41.49 **6 Claims**



1. In a cooling system for an internal combustion engine comprising a centrifugal fan and an annular radiator disposed thereabout whereby air is received axially by said centrifugal fan and blown generally radially therefrom to said annular radiator, said centrifugal fan comprising a pair of rotatable fan wheel discs which define the axial length of said centrifugal fan, and wherein the axial length of said annular radiator is approximately 2–3.3 times the axial length of said centrifugal fan, the improvement wherein

the peripheral edges of said fan wheel discs are rounded and curved away from one another to define an enlarged air exit orifice cross section, wherein said annular radiator is attached between a front wall and a rear wall, said cooling system further comprising an annular baffle ring attached to said front wall and extending axially toward, and terminating close to, the one of said pair of rotatable fan wheel discs which is closest thereto.

4,357,915

PROPELLER AND PISTON COMBINATION FOR INTERNAL COMBUSTION ENGINES

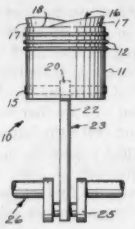
James R. Monsour, 10701 SW. 34th St., Miami, Fla. 33165

Filed Nov. 12, 1980, Ser. No. 206,189

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—45 R **1 Claim**

1. A propeller piston for internal combustion engines, comprising, in combination, a plurality of equally spaced-apart vanes, integrally formed on an end wall of said piston, providing rotation means for said piston, on a power stroke of said piston in its cylinder, a wrist pin removably received transversely through said piston, and through a swivel member of a connecting rod secured to a crankshaft of an internal combustion engine, wherein said plurality of vanes are integral with said end wall of said piston, and are urged into rotation by expanding hot gases on the power stroke of said piston, and said wrist pin is freely received through an opening extending through side faces of said swivel member, and wherein said piston rotates simultaneously with said vanes, by means of said



swivel member, and said swivel member consists of a pin fixedly secured in one end of the connecting rod of said piston, which is journaled on a crankshaft at its opposite end, and an extending head of said pin is freely and rotatably received in a correspondingly-shaped opening in a base portion of said swivel member.

4,357,916

TWO-STROKE CYCLE GASOLINE ENGINE

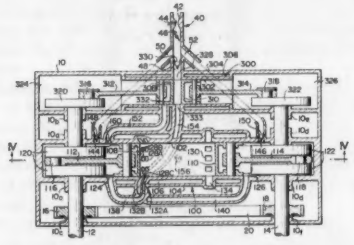
Masaaki Noguchi, Nagoya; Yukiyasu Tanaka, and Isao Igarashi, both of Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 960,657, Nov. 14, 1978, abandoned. This application Sep. 16, 1980, Ser. No. 187,793

Claims priority, application Japan, Aug. 2, 1978, 53-94238

Int. Cl.³ F02B *25/08*

U.S. Cl. 123—51 BA **10 Claims**



1. A two-stroke gasoline engine comprising: at least one two-stroke power cylinder-piston assembly including a power cylinder, two horizontally imposed power pistons, two crankcases to perform crankcase compression, main scavenging ports and exhaust ports being so arranged in said power cylinder so as to perform uniflow scavenging and so that said exhaust ports are opened before said scavenging ports and said exhaust ports are closed after said scavenging ports have been closed, said main scavenging ports being supplied with scavenging mixture from said crankcases, and at least one additional scavenging port located in an area including one of said main scavenging ports and arranged to eject a flow of scavenging mixture in substantially a radial direction transverse the axis of said uniflow scavenging so as to create turbulence of scavenging mixture; a supplementary scavenging pump including at least one pump cylinder-piston assembly of the reciprocating type having at least one pumping chamber and at least one pumping piston for supplying scavenging mixture during compression strokes of said pumping piston, said pump cylinder-piston assembly in synchronization therewith; a first pas-

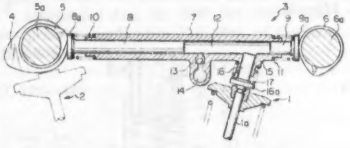
sage for conducting scavenging mixture from one pumping chamber of one pump cylinder-piston assembly of said supplementary scavenging pump to at least one crankcase of one power cylinder-piston assembly for supplying scavenging mixture from said one pumping chamber to the main scavenging ports of said one power cylinder-piston assembly via said one crankcase; a second passage for conducting scavenging mixture from said one pumping chamber to the additional scavenging port of said one power cylinder-piston assembly, the top dead center of said one pumping chamber being, as viewed according to crank angle, substantially shifted from the bottom dead center toward the main scavenging ports closing phase point of said one power cylinder-piston assembly; and means for closing said first passage over a substantial range as viewed according to crank angle from one phase point located between the main scavenging port opening phase point and the bottom dead center of said one power cylinder-piston assembly to at least the top dead center of said one pumping chamber and for concentrating the remaining scavenging mixture from said supplementary pump in said second passage to said additional scavenging port; wherein said main scavenging ports include first and second groups of scavenging ports, and wherein said first passage supplies scavenging mixture from said one pumping chamber to only one of the two crankcases of said one power cylinder-piston assembly, said one crankcase supplying scavenging mixture only to said first group of scavenging ports of said one power cylinder-piston assembly, while the other of the two crankcases of said one power cylinder-piston assembly supplies scavenging mixture only to said second group of scavenging ports of said one power cylinder-piston assembly.

4,357,917

VARIABLE VALVE TIMING SYSTEM FOR INDUCTION CONTROL OF AN INTERNAL COMBUSTION ENGINE

Shunichi Aoyama, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 9, 1979, Ser. No. 37,351
Claims priority, application Japan, May 15, 1978, 53/578140
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.16 **16 Claims**



1. An apparatus for actuating an inlet valve associated with a combustion chamber of an internal combustion engine having an exhaust valve, the combustion chamber undergoing a volume expansion during a first phase of the engine operation and a volume contraction during a subsequent second phase of the engine operation,

the valve actuating apparatus comprising:

a leading cam;

a trailing cam;

a hydraulic actuator having a hydraulic chamber, said hydraulic actuator including a first cam follower cooperating with said leading cam, a second cam follower cooperating with said trailing cam, said first and second cam followers including first and second pistons, respectively,

said hydraulic actuator including a third valve tappet engaging the inlet valve, said third valve tappet including a third piston,

said first, second and third pistons being reciprocally movable and defining said hydraulic chamber within said actuator, said hydraulic chamber being pressurized by reciprocation of said first and second pistons induced by rotation of said first and second cams;

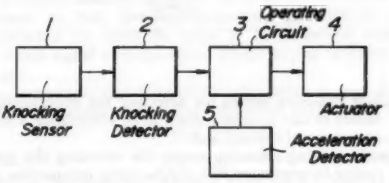
a controller to vary a phase difference between said first and second cams.

4,357,918

ENGINE CONTROLLING DEVICE

Masaharu Asano, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 30, 1980, Ser. No. 173,760
Claims priority, application Japan, Jul. 31, 1979, 54-97938
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—425 **8 Claims**



1. An engine controlling device comprising in combination:

knocking detecting means which detects pressure variation in a combustion chamber of the engine or vibration resulting from the pressure variation, and discriminates a knocking state;

operating and controlling means responsive to said knocking detecting means and adapted to generate a feed-back control output signal for controlling at least one operational parameter of the engine, which is influential in occurrence of the knocking, such that the knocking state is optimized;

said feed-back control signal having a level which decreases at a predetermined rate when said operating and controlling means is supplied by said knocking detecting means with a knocking signal indicating an occurrence of knocking, and which increases at a rate lower than said decreasing rate when said operating and controlling means is not supplied with said knocking signal; and

means for detecting a transitional driving condition of the engine and for controlling said operating and controlling means during the transitional driving condition such that the operating and controlling means generates a forced control output signal regardless of said feed-back control output signal derived from the knocking state, said forced control output signal controlling said at least one operational parameter of the engine, in the direction in which the knocking state is avoided so that a weak knocking state is maintained.

4,357,919

IGNITION TIMING CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Anjo, and Yoshinori Ootsuka, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 15, 1980, Ser. No. 178,281
Claims priority, application Japan, Sep. 21, 1979, 54-122364
Int. Cl.³ F02P *5/14*
U.S. Cl. 123—425 **8 Claims**

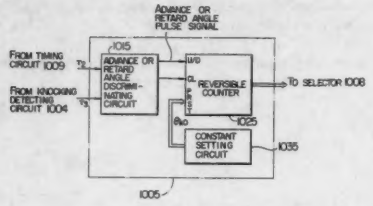
1. An ignition timing control apparatus for internal combustion engines comprising:

a knocking detector for detecting vibrations corresponding to a knocking phenomenon occurring in an engine and for producing an output signal responsive thereto;

a knocking detecting circuit for detecting a knocking condition of said engine in response to said output signal from

said knocking detector and for producing a detection signal responsive thereto;

a correcting advance angle operating circuit for retarding and advancing the ignition timing of said engine in response to said detection signal from said knocking detecting circuit which indicates the occurrence and non-occurrence of knocking, respectively;



failure detecting means for detecting the occurrence of a failure in said knocking detector in accordance with said output signal thereof; and

ignition timing retarding means for retarding the ignition timing by predetermined angular value irrespective of the output signal from said knocking detector when said failure detecting means has detected the occurrence of a failure in said knocking detector.

4,357,920

APPARATUS FOR THE ADJUSTMENT OF A QUANTITY-METERING MEMBER OF A FUEL INJECTION PUMP

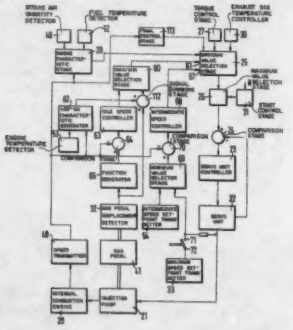
Gerhard Stumpp, Stuttgart; Wolf Wessel, Oberriexingen; Ulrich Flaig, Markgröningen; Fridolin Piwonka, Gerlingen, and Ludwig Walz, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 29,427, May 10, 1979, abandoned. This application Jan. 30, 1981, Ser. No. 230,180

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820807

Int. Cl.³ F02M *59/20;* **F02P** *5/08;* **F02M** *51/06*

U.S. Cl. 123—446 **13 Claims**



1. Apparatus for adjusting a quantity-metering member of a fuel injection pump in an internal combustion engine, which comprises:

servo controller means for adjusting the position of the quantity-metering member in accordance with a control signal provided to the servo controller means;

control means for providing a plurality of control signals for adjusting the position of the quantity-metering member in accordance with selected engine operation parameters, including at least one speed control signal and at least one limit control signal corresponding to maximum metered fuel quantities which can be permitted without causing excessive torque, exhaust gas temperature, or exhaust gas contamination, the control means including speed control means for generating the at least one speed control signal and operational limit control means for generating the at least one limit control signal;

minimum value selection means for selecting the minimum value control signal of the plurality of control signals;

start control means for providing a start control signal for adjusting the position of the quantity-metering member during engine starting; and

maximum value selection means for selecting the maximum value control signal of the minimum value and start control signals as the control signal provided to the servo controller means;

wherein the speed control means includes:

idling speed control means for providing an idling speed control signal for controlling engine speed during engine idling,

add-on characteristic generator means for providing an add-on speed control signal for controlling engine speed during engine coasting, and

second maximum value selection means, connected to receive a plurality of speed control signals, for selecting the maximum value speed control signals, for the control signals provided to the minimum value selection means, the idling speed control signal constituting a first speed control signal provided to the second maximum value selection means, and the add-on speed control signal constituting at least a portion of a second speed control signal provided to the second maximum value selecting means.

4,357,921

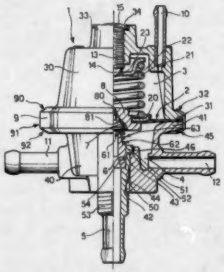
PRESSURE REGULATOR FOR INJECTION SYSTEMS FOR SPARK IGNITION INTERNAL COMBUSTION ENGINES

Lorenzo Ciaccio, and Alberto Banzola, both of Bologna, Italy, assignors to Weber Carburatori Azienda Della Weber S.p.A., Bologna, Italy

Filed Jun. 11, 1981, Ser. No. 272,609

Int. Cl.³ F02M *37/04*

U.S. Cl. 123—463 **5 Claims**



1. In a pressure regulator for the fuel injection system of a spark-ignition internal combustion engine, said regulator comprising:

a casing,

a diaphragm disposed within said casing and dividing the interior thereof into first and second chambers,

first duct means connected to said casing and, in use, serving to place the said first chamber in communication with the induction manifold of the engine,

second duct means connected to the casing and, in use, serving to place the said second chamber in communica-

tion with a fuel supply pump and with the fuel injectors of said engine,

third duct means connected to the casing and including a fuel return nozzle which extends into the interior of said second chamber whereby to enable said second chamber to be placed, in use of the regulator, in communication with the engine fuel tank, said nozzle being provided with a flat valve seat, and

regulating means arranged to cooperate with said valve seat provided on said nozzle to regulate the flow of fuel returning to the tank, the said regulation means comprising a valve element delimited by a spherical part and by a flat surface and so formed as to have an axis of symmetry, and a support rigidly connected to said diaphragm, said support being formed with a seating in which the said spherical part of the valve element is housed such as to enable the valve element to turn freely to maintain its flat surface facing the said flat valve seat of the nozzle whereby said flat surface and valve seat can cooperate to regulate fuel flow through said nozzle;

the improvement wherein:

the said valve element is so formed as to define both a blind hole extending inwardly from the said flat surface and a cylindrical spigot extending outwardly from the side of the valve element opposite said flat surface, said hole and the said spigot having respective axes of symmetry which are coincident with one another and with the said axis of symmetry of the valve element,

said regulator is further provided with resilient means for urging the said spherical part of the valve element into contact with said seating, and

said flat surface constitutes either a diametral plane of said spherical part or a plane parallel to said diametral plane and displaced slightly towards the said cylindrical spigot.

4,357,922

METHOD AND APPARATUS FOR OPERATING A FUEL-SUPPLY SYSTEM WITH LAMBDA CONTROL

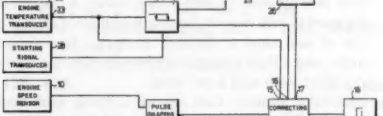
Günter Rosenzopf, Ludwigsburg; Hans Schnürle, Walheim; Wolfgang Rebmann, Vaihingenan der Enz, and Ulrich Drews, Vaihingen-Pulverdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 2,479, Jan. 10, 1979, abandoned. This application Aug. 22, 1980, Ser. No. 180,239

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805805

Int. Cl.³ F02M *51/02*

U.S. Cl. 123—489 **14 Claims**



1. In a method of operation of an internal combustion engine with a fuel supply apparatus and a lambda-control apparatus for the control of the fuel-air mixture based on a certain lambda value, wherein the fuel quantity to be supplied to the engine by the fuel supply apparatus is regulated in accordance with signals representing the engine RPM, intake manifold air-flow rate, and exhaust gas composition, and wherein the lambda-control apparatus operates in accordance with the temperature of an exhaust-gas sensor, the improvement comprising the steps of:

determining an engine temperature by an engine temperature sensor;

enriching the fuel-air mixture in accordance with the engine temperature determined by the engine temperature sensor so that the fuel-air mixture is heavily enriched when the engine is cold and this enrichment is reduced to zero as the engine temperature rises;

supplying the engine temperature determined by the engine temperature sensor to a threshold switching element having a hysteresis characteristic, for generating an output signal which is switched in accordance with the engine temperature between one value corresponding to a low engine temperature and another value corresponding to a high engine temperature;

controlling the actuation of the lambda-control apparatus in accordance with the output signal of the threshold element so that the lambda-control apparatus is only switched on when the value of the threshold element output signal corresponds to a high engine temperature; and

supplementarily enriching the fuel-air mixture in accordance with the output signal of the threshold element.

4,357,923

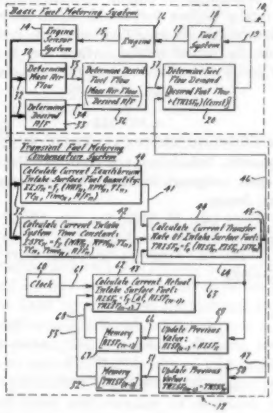
FUEL METERING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Laszlo Hideg, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 79,294, Sep. 27, 1979, abandoned. This application Oct. 7, 1980, Ser. No. 195,170

Int. Cl.³ F02B *3/00*; **F02D** *31/00*

U.S. Cl. 123—492 **5 Claims**



1. A fuel metering system for an internal combustion engine for determining a desired fuel flow rate based upon the mass of air flow into the engine and a desired air-to-fuel ratio, the engine having a passage through which a mixture of air and fuel is inducted into the combustion chamber or chambers of the engine, the fuel metering system comprising:

(a) a fuel system having electrically settable means for controlling the rate at which fuel is metered into the engine's intake passage, the fuel metering system determining the settings of the electrically settable fuel system without modification of the desired fuel flow rate except during selected conditions of engine operation, and providing an electrical signal that determines the setting of the fuel system;

(b) means for modifying the rate at which fuel is metered into the engine's intake passage to take into account the rate at which fuel is transferred from the surfaces of the

intake passage to the inducted air/fuel mixture or from the inducted air/fuel mixture to the surfaces of the intake passage; said means for modifying the rate at which fuel is metered being a digital computer programmed to calculate repetitively a value representing a current transfer rate of the intake surface fuel and the calculated value being used to modify the rate at which fuel otherwise would be metered into the engine's intake passage by generating a control signal that modifies the desired fuel flow rate to take into account the rate at which fuel enters or leaves the inducted mixture as it passes through the intake passage;

said means for modifying the rate at which fuel is metered including:

means for calculating current equilibrium intake surface fuel quantity ($EISF_n$) as a function of engine operating parameters;

means for calculating the current intake system time constant ($ISTC_n$) as a function of engine operating parameters;

means for calculating current actual intake surface fuel ($AISF_n$) as a first order differential function of time, previous actual intake surface fuel ($AISF_{n-1}$), and previous transfer rate of intake surface fuel ($TRISF_{n-1}$); and

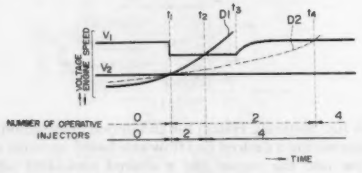
means for calculating current transfer rate of intake surface fuel ($TRISF_n$) as a function of current equilibrium intake surface fuel quantity ($EISF_n$), current intake system time constant ($ISTC_n$), and current actual intake surface fuel ($AISF_n$), so that the transfer rate of the intake surface fuel is repetitively calculated and combined with the desired fuel flow rate to obtain the electrical signal that determines the fuel flow demand from the engine's fuel metering system, the engine operating parameters being used to determine the quantity of liquid fuel that would be present on the surfaces of the engine's intake passage under equilibrium conditions of engine operation and wherein the actual intake surface fuel in the liquid state on such surfaces determines the modification of the desired fuel flow rate, and the actual intake surface fuel is approximated from a previous transfer rate of the intake surface fuel.

4,357,924

FUEL INJECTION CONTROL SYSTEM

Fukashi Sugasawa, Yokohama, and Haruhiko Iizuka, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 10, 1980, Ser. No. 196,027
Claims priority, application Japan, Oct. 12, 1979, 54-131540
Int. Cl.³ F02D *13/06*; F02B *3/00*
U.S. Cl. 123—493 **8 Claims**



1. A fuel injection control system for use with an internal combustion engine having fuel injectors, comprising:

(a) means for providing a fuel injection pulse signal, corresponding to the rate of air flow to said engine, to operate said fuel injectors;

(b) a signal generator for providing a first signal when the engine speed is above a first predetermined value and for providing a second signal when the engine speed is above a second predetermined value higher than said first predetermined value;

(c) cut-off means responsive to said first signal for cutting off the fuel injection pulse signal to a predetermined number of said fuel injectors during engine deceleration and responsive to said second signal for cutting off the fuel injection pulse signal to the remaining fuel injectors during engine deceleration; and

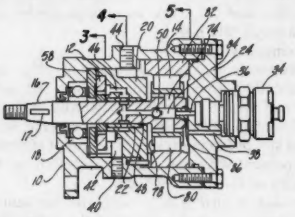
(d) control means for increasing said first predetermined value during rapid engine deceleration.

4,357,925

DISTRIBUTOR INJECTION PUMP FOR DIESEL ENGINES

Frank Woodruff, New Hartford, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 17, 1980, Ser. No. 217,299
Int. Cl.³ F02M *37/04*
U.S. Cl. 123—506 **20 Claims**



1. A distributor fuel injection pump comprising:

a generally cylindrical housing having a fuel inlet port and a distributor block normal to the axis of said housing and enclosing one end thereof, said distributor block having a plurality of injection ports symetrically disposed therethrough along the circumference of a circle concentric with the axis of said housing;

a shaft concentric with the axis of said housing having one end adapted to be rotatably driven and the other end supported for rotation within said housing;

charge pump means connected to said shaft for increasing the pressure of fuel received at said fuel inlet port to an intermediate pressure;

a distributor head connected to said other end of said shaft and rotatable therewith, said distributor head having a face normal to said housing's axis and adjacent to the internal surface of said distributor block, an axial bore concentric with said shaft interconnected at its internal end to the output of said charge pump, a check valve disposed at said internal end of the axial bore for providing a unidirectional fluid flow from said charge pump into said axial bore, a diametrical bore intercepting said axial bore downstream of said check valve, a distributor port disposed in said face of the distributor head offset from the axis of said shaft a distance equal to the radius of said circle, and a fluid passageway interconnecting said distributor port with said axial bore;

a stationary annular cam circumscribing said distributor head, said cam having a plurality of lobes equal in number to said plurality of injection ports symetrically disposed along its internal surface;

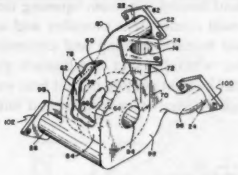
an injection pump having its moving parts disposed in said distributor head, said injection pump having a pair of opposing plungers disposed in said diametrical bore, one either side of the axis of said shaft and a pair of cam followers, one disposed between each of said plungers and the internal surface of said annular cam, the lobes of said annular cam displacing said plungers towards each other generating a high pressure fuel flow in said axial bore which is applied to said distributor port each time said distributor port is connected to one of said injection ports.

4,357,926

POLLUTION EMISSION CONTROL AND FUEL SAVING DEVICE FOR INTERNAL COMBUSTION ENGINES

Thomas E. Quick, 1616 Park Pl., Wichita, Kans. 67203

Continuation of Ser. No. 454,475, Mar. 25, 1974, abandoned.
This application Sep. 13, 1976, Ser. No. 722,601
Int. Cl.[3] F02M *31/00*
U.S. Cl. 123—545 13 Claims



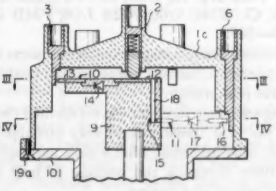
1. In a carburation process as practiced in the operation of an internal combustion engine running under varying load conditions wherein heat is supplied to an imperfect fuel-air mixture of the ratio to be burned in the engine and constituted of a stream of air containing droplets of a volatile liquid fuel in order to vaporize substantially all of the liquid contained in such mixture and to improve the intimacy of the fuel-air mixture prior to its introduction into the combustion chamber of an internal combustion engine, the improvement in the operation of the engine when the same is under heavy load condition comprising minimization of the amount of heat energy supplied by supplying the heat energy preferentially and substantially solely to the relatively dense liquid phase of the fuel as compared to the vapor thereof and the air by directing the entire stream to flow along a spiral path having a plurality of convolutions, maintaining substantial fluid flow isolation between adjacent convolutions of the stream, said path having a radially outermost flat portion thereby to urge preferentially the entirety of the relatively dense liquid phase of the mixture toward and to maintain substantially the entirety of the liquid phase at the radially outermost portion of the spiral path, while contacting the fuel-air stream along the radially outermost portion of its spiral path by a heat conducting material, heating the heat conducting material, with the rate of supply of heat energy to the fuel-air stream being approximately sufficient to vaporize all the liquid content of the fuel-air mixture, and allowing liquid so vaporized freely to diffuse in the stream radially inwardly along said spiral path.

4,357,927

IGNITION DEVICE FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Toshihiko Igashira, Toyokawa; Hisasi Kawai, Toyohashi, and Ken Nomura, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 2, 1981, Ser. No. 279,708
Claims priority, application Japan, Jul. 7, 1980, 55-91636; Nov. 25, 1980, 55-164610
Int. Cl.[3] F02P *3/04, 7/06*
U.S. Cl. 123—622 10 Claims



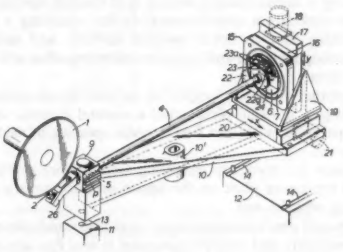
1. An ignition device for a multi-cylinder internal combustion engine having an ignition coil, the two primary windings of said ignition coil being wound in opposite directions from each other, positive and negative high voltages being alternately generated across the secondary winding of said ignition coil, and a distributor, said distributor comprising a center electrode; two electrical distributing conductors in the rotor of said distributor, said center electrode being connected electrically with said two electrical distributing conductors, said electrical distributing conductors including at least one center conductor and two projecting conductors for distributing electric power to side electrode; two diodes having opposite polarities from each other and connecting said center conductor and said projecting conductors for electrical distribution, respectively, and; a plurality of side electrodes adapted to be electrically coupled successively with said projecting conductors according to the rotation of said rotor; whereby said positive and negative high voltages are supplied alternately to said side electrodes through said corresponding projecting conductors.

4,357,928

DRESSING DEVICE FOR SHAPING GRINDING WHEELS

Jack R. Hopkins, Wolsey Cottage, Swallowfield, Berkshire RG7 1TH, England

Filed Jun. 27, 1980, Ser. No. 163,845
Claims priority, application United Kingdom, Jul. 2, 1979, 7922889
Int. Cl.[3] B24B *53/12*
U.S. Cl. 125—11 F 9 Claims



1. A dressing device for profiling grinding wheels, comprising an arm with front and rear ends, and a longitudinal axis, bearing means supporting said arm intermediate said front and rear ends thereof for free angular movement of the arm about a predetermined fixed point on said longitudinal axis and for rotation about said axis, means carried on said arm at said front end thereof for supporting a working element, and control means coupled to said arm rearwardly of said predetermined fixed point for controlling angular displacement of the arm about said fixed point and rotation of said arm about said longitudinal axis, said control means comprising means for rectilinear movement in two mutually perpendicular directions in a plane substantially normal to said axis of the arm.

4,357,929

SPACE HEATING APPARATUS

Edward Johnson, Furlong, Pa., assignor to Kero-Sun, Inc., Kent, Conn.

Filed Sep. 5, 1980, Ser. No. 184,356
Int. Cl.[3] F24C *5/04;* F23D *13/04*
U.S. Cl. 126—96 4 Claims

1. A space heating apparatus for use in particular with kerosene fuel, comprising:

(a) fuel tank and base assembly, said fuel tank having a top opening and an upright wick-supporting cylinder extending from said opening, wherein said cylinder is hollow for

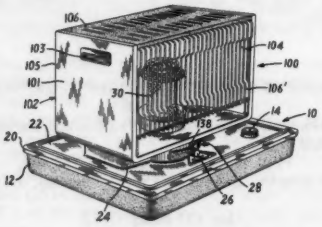
permitting the passage of combustion air from below said tank up through said cylinder and for permitting char and other debris to exit said apparatus;

(b) a lower spill tray;

(c) means for mounting said lower spill tray to the underside of said fuel tank and base assembly to be positioned below said upright cylinder for collecting char and other debris and to permit combustion air to enter said hollow cylinder;

(d) a combustion chassis assembly supported on said base assembly over said upright cylinder and including a wick positioned on said cylinder and partially disposed in said fuel tank, a wick height adjusting mechanism and an automatic igniter mechanism for igniting and supporting a flame;

(e) a top cover plate arranged to fit over said combustion



chassis assembly on said fuel tank and base assembly and having a turret section with a first central opening over said combustion chassis assembly for receiving a mantle assembly and an upper support surface, and said plate including an upper spill tray for collecting char and spilled kerosene;

(f) a cabinet assembly supported on said turret section and having a bottom plate with a second central opening cooperating with said first central opening of said turret section;

(g) means for pivotally mounting said cabinet assembly to said top cover plate on the upper support surface of said turret section; and

(h) a mantle assembly positioned over said combustion chassis assembly and partially disposed in said first and second openings to communicate with said combustion chassis assembly for receiving said flame.

4,357,930

HEATING SYSTEM FOR FIREPLACES

H. Alfred Eberhardt, 1630 Harvard La., Paoli, Pa. 19301

Filed Apr. 22, 1981, Ser. No. 256,310

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—121 **11 Claims**

1. For use with a fireplace comprising a combustion chamber having a front opening and a back wall, a chimney flue connected to a top portion of the combustion chamber for discharging combustion gases therefrom, a hearth, an opening in the hearth, means for supplying relatively cold air to the opening in the hearth, a fire screen assembly or the like for closing off the front opening of the fireplace, and means for supporting a quantity of solid combustible product in the combustion chamber in a location spaced above the hearth opening, the combination comprising,

a heat exchanger,

means for mounting said heat exchanger at the top portion of the combustion chamber to extend horizontally across the location where said chimney flue connects with the top portion of the combustion chamber,

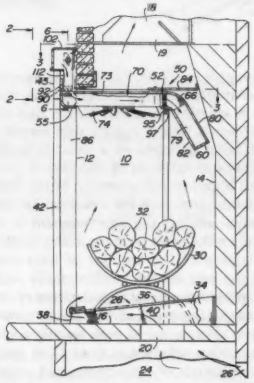
said heat exchanger comprising means defining a first heat exchange passage for the flow of room air across the top portion of the combustion chamber,

and means defining a second heat exchange passage for the flow of combustion gases vertically from said combustion chamber to said chimney flue,

said first and second passages being in heat exchange relationship so that the hot combustion gases passing through said second heat exchange passage heat up the room air flowing through said first heat exchange passage,

and fan means for circulating room air through said first heat exchange passage, said

second heat exchange passage being located centrally of said heat exchanger and having a bottom opening communicating with the top of said combustion chamber and a top opening spaced above said bottom opening and communicating with said chimney flue whereby said combustion gases pass upwardly through the central portion of said heat exchanger, said first heat exchange passage extending around said second heat



exchange passage in heat exchange relationship therewith, said heat exchanger including a bottom plate and a top plate spaced above said bottom plate, said bottom opening being formed in said bottom plate and said top opining being formed in said top plate, said bottom opening being formed by a plurality of circumferentially spaced, radially outwardly extending openings formed by a plurality of fins bent downwardly from said bottom plate, said top opening being formed by a circular opening in said top plate above said bottom opening, said fins extending downwardly at an angle so as to cause the combustion gases flowing upwardly from the combustion chamber and through said top opening to swirl in a counter-clockwise direction as viewed from the top of the heat exchanger, said top opening having a smaller area than said bottom opening to cause the flow of combustion gases to accelerate as said gases flow through said second heat exchange passage.

4,357,931

FLAMELESS HEAT SOURCE

Kenneth R. Wolpert, 337 Poplar, and George H. Wolpert, Jr., 1044 Park Ave., both of Columbia, Pa. 17512

Filed Sep. 11, 1980, Ser. No. 186,342

Int. Cl.³ F24C *9/00;* **F22B** *3/06;* **F24D** *3/00*

U.S. Cl. 126—247 **15 Claims**

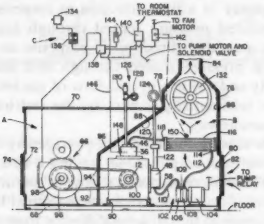
1. An apparatus for generating combustionless heat from the mechanical energy of motion imparted to a heat transfer fluid, said apparatus comprising:

(a) a casing structure having a cavity formed therein through which the heat transfer fluid may circulate, said casing structure also including inlet means and outlet means for respectively directing the passage of heat transfer fluid into and out of said cavity;

(b) rotor means mounted within said cavity for imparting mechanical energy of motion in the form of a rotational

flow to a volume of heat transfer fluid contained within said cavity during a first interval; and

(c) heat generating control means positioned between said inlet means and said outlet means for confining said volume of the heat transfer fluid within said cavity during said first interval and for permitting substantial circulation of the heat transfer fluid into, through and out of said cavity during a second interval, said heat generating control means including a blocking means for preventing the



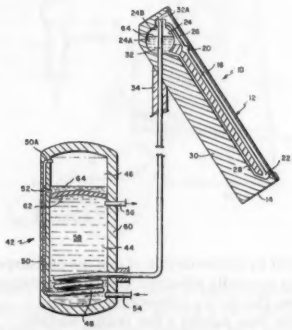
passage of any portion of said volume of heat transfer fluid through said inlet means and said outlet means to confine said volume of heat transfer fluid within said cavity during said first interval causing the rotational flow of said volume of heat transfer fluid to be maintained in essentially nonturbulent, streamlined flow condition during said first interval and the mechanical energy of motion imparted to said volume of heat transfer fluid during said first interval to be used primarily to increase the temperature of said volume of heat transfer fluid.

4,357,932

SELF PUMPED SOLAR ENERGY COLLECTION SYSTEM

W. Dodd Stacy, Sharon, Vt., assignor to Creare Incorporated, Hanover, N.H.

Filed May 29, 1980, Ser. No. 154,535
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 **14 Claims**



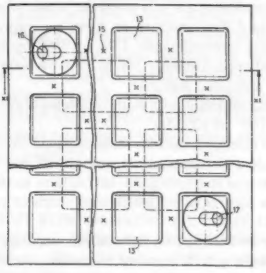
1. A passive, two stroke heating system, comprising a reservoir for storing a working fluid primarily in the liquid state, a vaporizer positioned gravitationally below said reservoir and connected to receive liquid working fluid from said reservoir and to vaporize said fluid on application of heat energy thereto, a vessel for containing a mass of liquid to be heated, a condenser within said vessel for heating said liquid mass by condensation of working fluid vapor therein, a conduit in unrestricted fluid communication with said condenser and carrying working fluid thereto from said vaporizer during a first stroke occurring when external energy is being applied to said vaporizer at a rate sufficient to vaporize fluid therein, a sump positioned for no more than limited thermal contact with said liquid mass and connected to exchange working fluid with said condenser; said vaporizer, said reservoir, said conduit, said condenser, and said sump being hermetically sealed and in unrestricted fluid communication with each other whereby said sump accumulates substantially all the working fluid of said reservoir substantially in liquid form during said first stroke and returns said fluid in liquid form to said reservoir during a second return stroke when the vaporizer loses a sufficient amount of heat to condense the vapor therein.

4,357,933

ABSORBER FOR A SOLAR COLLECTOR

Andre Paymal, Saint Germain-en-Laye, France, assignor to Saint-Gobain Industries, Neuilly sur Seine, France

PCT No. PCT/FR79/00034, § 371 Date Dec. 10, 1979, § 102(e) Date Dec. 10, 1979
PCT Filed Apr. 20, 1979, Ser. No. 177,758
Claims priority, application France, Apr. 20, 1978, 78 11728
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—449 **3 Claims**



1. An absorber for a solar collector comprising two sheets each of which are stamped with shapes which define a repetitive pattern having columns and rows, said shapes having generally concave surfaces, the stamped shapes of a column or row of a sheet being in fluid contact with at least four shapes of the columns and rows of the other sheet, said sheets having non-stamped portions which form at least one zone of contact which are connected by weld points regularly distributed therein; said sheets being joined together by welding at their periphery and having a liquid inlet pipe welded to a corner thereof and an outlet pipe welded to a diagonally opposite corner of said absorber, said sheets having a fluid flowing therebetween, said fluid entering said sheets through said inlet pipe and discharging through said outlet pipe.

4,357,934

METHOD OF TREATING MALE INFERTILITY

Mostafa S. Fahim, Columbia, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed Jul. 23, 1980, Ser. No. 171,498
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—1 R **12 Claims**

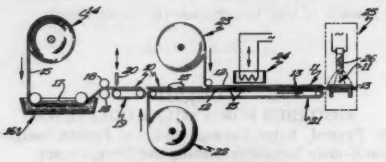
1. A method of treating infertility in male animals by increasing the concentration of testosterone in the seminiferous tubules without correspondingly increasing the testosterone level in the blood plasma which comprises injecting a sterile aqueous suspension of testosterone into each testis of said male animal, said testosterone being suspended in an injection volume which will not rupture the seminiferous tubules.

4,357,935

DRY METHOD OF MAKING A DRY SOCKET DRESSING

William P. Frantzich, Wayzata, and Garry R. Persons, Edina, both of Minn., assignors to C. R. Canfield & Company, Inc., Edina, Minn.

Filed Nov. 12, 1980, Ser. No. 206,281
Int. Cl.[3] A61L *15/00*
U.S. Cl. 128—156 3 Claims



1. A process for making a dressing for treating dry sockets resulting from tooth extractions, comprising:

combining a predetermined amount of ointment and a predetermined amount of an emulsifier, and heating said mixture to a temperature within the range of approximately 135° to 150° F., adding a mixture containing a predetermined amount of a liquid analgesic material and an emulsifier to said first mixture to form an impregnation bath containing approximately 75% to 95% by weight of ointment and approximately 1% to 25% by weight of emulsifiers and analgesic material,

cooling said impregnation bath to a temperature of approximately 105° to 125° F.,

moving an elongate, narrow strip of gauze through said bath to permit a predetermined amount of the impregnation bath material to impregnate and adhere to the gauze strip,

cutting the impregnated gauze into strips of predetermined lengths,

packaging said strips in a transparent package formed of an inert plastic which is sealed from the exterior,

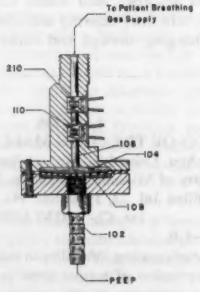
and exposing the sealed package containing the impregnated gauze to gamma radiation to sterilize the impregnated gauze strips and the interior of the package.

4,357,936

DIRECTIONAL THERMISTOR ASSIST SENSING

Raymond A. Ellestad, Rialto, and Finn Sveen, Redlands, both of Calif., assignors to Bear Medical Systems, Inc., Calif.

Continuation-in-part of Ser. No. 17,793, Mar. 5, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 139,628
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—204.23 23 Claims



1. In a respiratory ventilator of the type having means for providing a respiratory assist cycle for a patient, a mechanism for controlling said assist cycle providing means, comprising:

breathing conduit means adapted for fluid communication with the breathing passages of said patient;

a sensing tube in fluid communication with said breathing conduit means and receptive to patient-induced respiratory pressures therein, said sensing tube having a restricted-diameter passageway therethrough which is subject to said patient-induced respiratory pressures;

pressure-sensitive means coupled to said sensing tube and in fluid communication with said passageway, for generating a high velocity, low volume flow of gas through said passageway in a first direction in response to an inhalation-induced pressure sensed through said sensing tube, and in a second direction in response to an exhalation-induced pressure sensed through said sensing tube, the velocity and volume of said flow of gas being determined, at least substantially in part, by the restricted diameter of said passageway;

fluid flow sensing means in said passageway for producing a first electrical output signal having a first predetermined output level in response to a flow of gas in said first direction and a second electrical output signal having a second predetermined output level different from said first predetermined output level in response to a flow of gas in said second direction; and

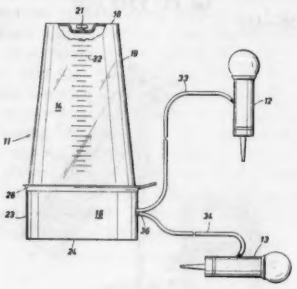
control means, responsive to said first and second electrical output signals, for actuating said assist cycle providing means in response to said first electrical output signal, and blocking the actuation of said assist cycle providing means in response to said second electrical output signal.

4,357,937

MEDICAL IRRIGATION DEVICE

Lawrence M. Burrell, Jr., 2702 Briargrove, Houston, Tex. 77057, and Jean Cukier, 7000 Fannin, Suite 2400, Houston, Tex. 77030

Filed Jun. 26, 1981, Ser. No. 277,658
Int. Cl.[3] A61M *1/00*
U.S. Cl. 128—232 10 Claims



1. A medical irrigation device of one use and disposal design for providing manually selective volume and stream intensity in liquid flow, the device comprising:

(a) a tubular base having a flat resting surface;

(b) an inverted transparent reservoir vessel with a closed top and open bottom;

(c) mounting means holding in fluid tight engagement said reservoir vessel onto said base and sealing the open bottom of said reservoir with a closure member;

(d) outlet conduit means carried in said closure member and extending downwardly within said base;

(e) at least one hand operated syringe;

(f) a flexible hose interconnecting an inlet on said syringe with said outlet conduit means;

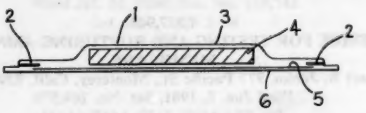
(g) and said flexible hose extending from said base adjacent said closure member whereby the device resists tipping even when empty of liquid.

4,357,938

DISPOSABLE DIAPER

Osamu Ito, Utsunomiya; Harumasa Yamasaki, Wakayama, and Kazunori Nishizawa, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 278,296
Claims priority, application Japan, Aug. 7, 1980, 55-108583
Int. Cl.³ A41B 13/02
U.S. Cl. 128—287 10 Claims



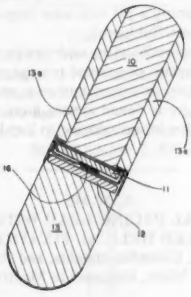
1. A disposable diaper comprising a liquid-permeable surface sheet, a liquid-impermeable back sheet, a water-absorbing layer located between said sheets, and water-absorbing shrinkable fibers which shrink in the direction of the fiber length and are rendered elastic on absorption of water, said water-absorbing shrinkable fibers being fixed along the central portion and extending in the lengthwise direction of the disposable diaper and being located so that said water-absorbing shrinkable fibers are not placed on the water-absorbing layer but are capable of being wetted when the diaper is wetted, said water-absorbing shrinkable fibers, when wetted, exhibiting a percent shrinkable of at least 15% and a shrinking force of at least 100 g.

4,357,939

SANITARY NAPKIN WITH CROSS DIRECTIONAL FLUID DIRECTING MEANS

David M. Jackson, and Robert J. Roeder, both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 24, 1980, Ser. No. 219,946
Int. Cl.³ A61F 13/16
U.S. Cl. 128—290 R 5 Claims



1. A sanitary napkin comprising in combination:

(a) an absorbent component having a first batt proximal to the wearer and a second absorbent batt adjacent to the first batt and distal from the wearer;

(b) a fluid impervious baffle overlaying the bottom surface of the second batt, the sides of the absorbent component and longitudinally extending peripheral segments of the surface of the first batt adjacent the wearer; and

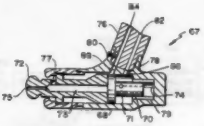
(c) a flow directional means extending over the surface of the first batt adjacent the wearer, under the edges of the longitudinal segments of the baffle, extending downward along the sides of the first batt and between the bottom surface of the first batt and the adjacent surface of the second batt, said means preferentially directing the flow across the width of the napkin.

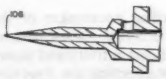
4,357,940

TISSUE PNEUMATIC SEPARATOR STRUCTURE

George H. Muller, Ann Arbor, Mich., assignor to Detroit Neurosurgical Foundation, Detroit, Mich.

Filed Dec. 13, 1979, Ser. No. 103,206
Int. Cl.³ A61B 17/00
U.S. Cl. 128—303 R 28 Claims





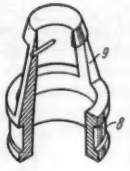
1. A tissue pneumatic separator comprising a source of a compressed gas under pressure, means connected to the source of gas for directing gas therefrom at tissue to be separated, including a pneumatic activated floating tip adapted to be applied to body tissue at a wound site, positioned on the tissue pneumatic separator through which the gas is directed at the tissue the position of which tip is determined by the pressure of the gas and external mechanical force applied thereto in opposition to the gas pressure.

4,357,941

INSTRUMENT FOR MARKING OUT THE CENTRAL OPTICAL ZONE OF THE CORNEA

Boris P. Golubkov, ulitsa Chkalova, 9/19, kv. 19, Khimki Moskovskoi oblasti; Svyatoslav N. Fedorov, ulitsa Valtera Ulbrikhta, 2a, kv. 40, Moscow, both of U.S.S.R.; Valery V. Durnev, deceased, late of Moscow, U.S.S.R., and by Tamara S. Durneva, administratrix, ulitsa Lavochkina, 44, korpus 2, kv. 442, Moscow, U.S.S.R.

Filed Sep. 29, 1980, Ser. No. 191,707
Int. Cl.³ A61D 1/00
U.S. Cl. 128—316 15 Claims



1. An instrument for marking out the central portion of the optical zone of the cornea, comprising an oblong hollow body featuring the edge of one of its ends sharpened, while the diameter of the body across said end equals a preset diameter of the central optical zone, and a sight accommodated inside the body at right angles with the longitudinal axis thereof, a sighting point of said sight lying on the longitudinal axis of the oblong body of the instrument.

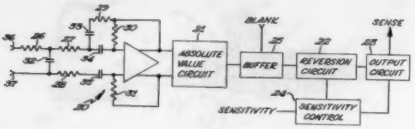
4,357,942

Patent Not Issued For This Number

4,357,943
DEMAND CARDIAC PACEMAKER HAVING REDUCED POLARITY DISPARITY

David L. Thompson, Fridley; Jerome T. Hartlaub, New Brighton, both of Minn., and Marc T. Stein, Tempe, Ariz., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 957,814, Nov. 6, 1978, abandoned. This application Jan. 16, 1981, Ser. No. 225,679
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG 6 Claims



1. In a cardiac pacemaker of the type having means for sensing heart activity, means responsive to the sensing means for detecting heart activity and means responsive to the detecting means for affecting the operation of said pacemaker, the improvement wherein said detecting means comprises:

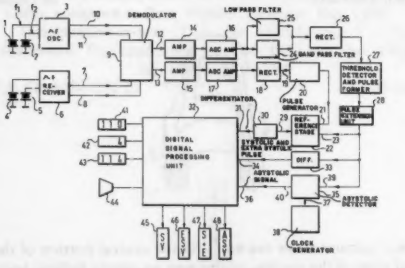
amplifier means responsive to said sensing means and having differential input means and dual output means and an essentially polarity independent degree of response to said sensing means, the signals appearing at said dual output means being of opposite polarity to each other and having an absolute value representative of signals appearing at said input means; and

absolute value means connected to receive both amplifier output means opposite polarity signals for providing single polarity signals representative of signals of either polarity sensed by said sensing means.

4,357,944
CARDIOTACHOMETER

Rudolf Mauser, Haussmannstr. 146B, Stuttgart, and Horst Chmiel, Paracelsusstrasse 14, 7250 Leonberg, both of Fed. Rep. of Germany

Filed Oct. 8, 1980, Ser. No. 194,955
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1979, 2941668
Int. Cl.³ A61B 5/02
U.S. Cl. 128—663 15 Claims

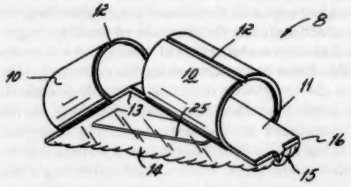


1. A cardiotachometer for determining heart-beat frequency comprising a first and a second doppler type ultrasonic transmitting and receiving device and a demodulator unit, said first ultrasonic transmitting and receiving device operating on a first frequency f_1 and providing at the output of the demodulator unit a first Doppler-frequency signal Δf_1 which is indicative of the vascular blood flow velocity; said second ultrasonic transmitting and receiving device operating on a second frequency f_2 lower than said first frequency f_1 and providing at the output of the demodulator unit a second Doppler-frequency signal Δf_2 which is indicative of the movement of the vascular wall; a first signal-processing circuit receiving as its input signal said first Doppler-frequency signal (Δf_1), a second signal-processing circuit receiving as its input signal said second Doppler-frequency signal (Δf_2), and a reference device receiving as its input signals the output signals of said first and second signal processing circuit, said reference device being adapted to deliver an output signal each time an output signal of said first signal processing circuit arrangement coincides with an output signal of said second signal processing circuit arrangement which is indicative of the heart-beat frequency.

4,357,945
DEVICE FOR TESTING AND RUPTURING AMNIOTIC MEMBRANE

Albert B. Janko, 977 Pacific St., Monterey, Calif. 93940

Filed Jun. 1, 1981, Ser. No. 269,578
Int. Cl.³ A61B 5/10; A61F 13/00
U.S. Cl. 128—771 10 Claims



1. A device for testing for the presence of amniotic fluid in the cervix, thereby to indicate the intactness of the amniotic membrane, comprised of:

a backing member sized to fit, in use, longitudinally adjacent a joint of a finger, said backing member being laterally flexible at at least one point thereof which in use is adjacent to said joint of the finger,

means for removeably attaching said backing member to said finger,

a flexible sac affixed to and carried by said backing member, said sac containing a pH indicator responsive to the presence of amniotic fluid, and

sac-piercing means affixed to said device adjacent said sac, said piercing means positioned to engage and rupture said sac when said sac is drawn taut over said piercing means when said finger is flexed at said joint, thereby exposing the pH indicator inside said sac to local fluids in the area of the cervix.

4,357,946
EPICARDIAL PACING LEAD WITH STYLET CONTROLLED HELICAL FIXATION SCREW

Robert G. Dutcher, Columbia Heights, and Edward G. O'Neill, St. Paul, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 24, 1980, Ser. No. 133,217
Int. Cl.³ A61N 1/04
U.S. Cl. 128—785 5 Claims

1. A body implantable lead comprising:

a conductor having proximal and distal ends;

an insulating sheath of body compatible materials covering said conductor;

a stylet removably located within said insulating sheath;

an electrode housing attached to said distal end of said conductor;

a fixation helix having a pointed tip rotatably attached to

said electrode housing at an angle substantially perpendicular to the longitudinal axis of said stylet; and

means within said electrode housing for transmitting torque from said stylet to said fixation helix whereby rotation of said stylet causes said fixation helix to rotate.

4,357,947

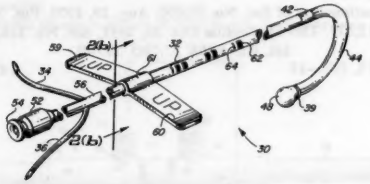
ELECTRODE AND METHOD FOR ENDOCARDIAL ATRIAL PACING

Philip O. Littleford, 251 Salvador Sq., Winter Park, Fla. 32789

Filed Jul. 14, 1980, Ser. No. 168,742

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—786 **20 Claims**



1. A pacing electrode for rapid endocardial insertion in a patient's body and for interconnection with a pacemaker, comprising:

(a) a flexible conductor having an outer, electrically insulating sheath about said conductor, said conductor and said sheath forming a flexible curve at one end with said conductor having an exposed terminal along said flexible curved end, said terminal adapted for making electrical endocardial contact;

(b) means along said sheath for indicating the orientation of said curve after said curved end has been inserted into the heart; and

(c) said orientation means includes a wing extending laterally from said sheath, the lateral direction of said wing indicating the orientation of said curved end.

4,357,948

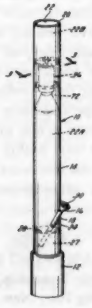
SMOKE FILTERING AND COOLING DEVICE

Robert A. Schweitzer, 4101 N. 82nd St., Milwaukee, Wis. 53222, and James H. Tate, Milwaukee, Wis., assignors to Robert Schweitzer, Milwaukee, Wis.

Filed Dec. 11, 1980, Ser. No. 215,538

Int. Cl.³ A24F *1/30*

U.S. Cl. 131—173 **9 Claims**



1. A filtering and cooling device for use in an upright passage through which smoke or gas rises comprising: first means on said device operable to releasably secure said device in said passage and to effect a seal between said device and the wall of said passage whereby a body of liquid may be retained in said passage in association with said device, said first means comprising an expandable and retractable member engageable with the wall of said passage; and second means on said device and accessible from the exterior of said passage for operating said first means, said second means being selectively operatable to effect expansion or contraction of said member; said device including passageway means for directing said smoke or gas through said body of liquid.

4,357,949

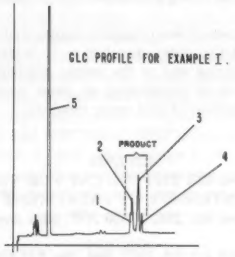
CARBOAMIDOALKYL NORBORNANES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Philip T. Klemarczyk, Old Bridge; Frederick L. Schmitt, Holmdel; Edward J. Granda, Englishtown, and Domenick Luccarelli, Jr., Ocean, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

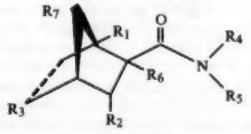
Division of Ser. No. 206,632, Nov. 13, 1980, Pat. No. 4,324,912, which is a continuation-in-part of Ser. No. 152,188, Jul. 17, 1980, abandoned. This application May 28, 1981, Ser. No. 268,144

Int. Cl.³ A24B *3/12, 15/30*

U.S. Cl. 131—276 **4 Claims**



1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco flavor, a smoking tobacco composition or a smoking tobacco article comprising the step of adding to a smoking tobacco flavor, a smoking tobacco composition or a portion of a smoking tobacco article at least one norbornane derivative defined according to the structure:

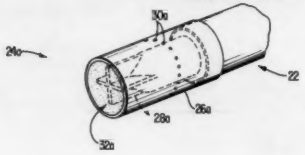


wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond and wherein R_2 is methyl or hydrogen; R_6 is methyl or hydrogen; R_1, R_3 or R_7 represent methyl or hydrogen, with the proviso that one of R_1, R_3 and R_7 represents methyl and the other two of R_1, R_3 and R_7 represent hydrogen; wherein R_4 and R_5 are the same or different and each represents hydrogen or C_1–C_3 lower alkyl.

4,357,950
TOBACCO SMOKE FILTER HAVING IMPROVED TAR/CARBON MONOXIDE RATIO

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Filed May 27, 1980, Ser. No. 153,560
Int. Cl.³ A24D *3/04, 3/00*
U.S. Cl. 131—338 **35 Claims**



1. Filtering means for filtering undesirable constituents from smoke comprising a filter element including:

(a) an axially elongated outer member having an axial passage therein, said outer member consisting essentially of a filtering material and having a smoke receiving end spaced from a smoke discharging end;

(b) sealing means for sealing off the passage to substantially prevent the axial movement of smoke through said passage and for directing the smoke entering at the smoke receiving end to pass through the filtering material of the outer member, said sealing means comprising an axially elongated inner member of smoke impermeable material coaxially disposed in relation to said outer member within said axial passage to substantially preclude the axial movement of smoke between the outer surface of said inner member and the inner surface of said outer member, said inner member being co-extensive with said axial passage; and

(c) wrapping means for retaining smoke within the filtering material of the outer member as it is drawn from the smoke receiving end to the smoke discharging end, said wrapping means comprising an outer wrap disposed on the outer surface of said outer member.

4,357,951
FROSTING OR TIPPING CAP FOR VARYING INTENSITY OF TREATMENT

Ronald A. Aricco, Ste. 206, 17530 NW. 68th Ave., Miami, Fla. 33015

Filed Jul. 15, 1977, Ser. No. 815,819
Int. Cl.² A45D *19/18*
U.S. Cl. 132—9 **3 Claims**

1. A hair treatment cap useful for selecting locks of human hair in a predetermined uniform density pattern and for treating the selected locks to achieve a desired treatment intensity, the cap providing shielding to the unselected remaining hair from the treatment material comprising:

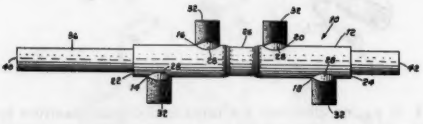
a flexible sheet for covering the upper portion of a human head, said flexible sheet having a first group of areas for forming apertures uniformly distributed about the sheet in a uniform pattern, and a second group of areas for forming apertures arranged in accordance with a uniform pattern, said first and second groups of apertures having a different number of apertures; and

indicia means disposed on said sheet in proximal relationship to said first and second groups of areas for forming apertures for distinguishing said first group areas from said second group of areas.

4,357,952
TUBULAR VALVE DEVICE AND METHOD OF ASSEMBLY

Helmut Knecht, Clark, N.J., assignor to Teledyne Adams, Union, N.J.

Continuation of Ser. No. 70,690, Aug. 29, 1979, Pat. No. 4,312,377. This application Oct. 30, 1981, Ser. No. 316,892
Int. Cl.³ F16K *11/085, 51/00*
U.S. Cl. 137—15 **4 Claims**



1. A method of assembling a tubular valve having an outer tubular shell including at least one pair of ports on opposing surfaces, at least one pair of deformable resilient valve sealing means each having a main hollow cylindrical section with a longitudinal passage and a lateral tubular extension with a secondary passage, and an inner hollow transfer tube including at least one pair of openings on opposing surfaces, comprising the steps of:

(1) placing a deformable resilient valve sealing means onto an insertion tool so that the tool extends through the longitudinal passage,

(2) folding the lateral tubular extension around the main cylindrical section and tool,

(3) inserting the tool and valve sealing means into the outer tubular shell until the lateral tubular extension is aligned with a port,

(4) manipulating and twisting the tool to cause the lateral tubular extension to project through and spring out of the port,

(5) repeating steps (1) through (4) to position a deformable resilient valve sealing means at each port with the lateral tubular extensions projecting therethrough, and

(6) inserting the inner transfer tube through the longitudinal passages of said valve sealing means within said outer tubular shell until said one pair of openings are aligned with said one pair of ports, said valve sealing means providing a close fitting fluid sealing engagement between said inner transfer tube and outer shell in the areas around said openings and ports while permitting movement and rotation of said inner tube within said valve sealing means and outer shell wherein said insertion tool forms a portion of said tubular valve when assembled.

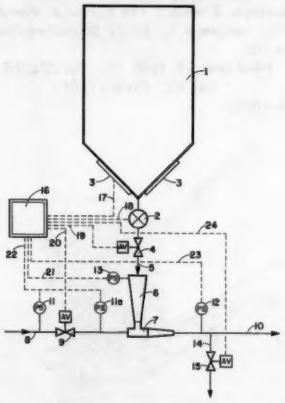
4,357,953
APPARATUS FOR SLURRYING POWDERED SOLIDS

Donald E. Patterson, Ringle Township, Marathon County, Wis., assignor to Sterling Drug Inc., New York, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,436
Int. Cl.³ B01F *3/12*
U.S. Cl. 137—88 **18 Claims**

1. An apparatus for introducing powdered solids into a liquid stream at a controlled rate to form a slurry, comprising:

a vessel for storing powdered solids and from which solids flow is assisted by gravity;
metering means communicating with said storage vessel and controlling the flow rate of said solids from said vessel;
an eductor through which said liquid stream passes, having a pressure liquid inlet, suction inlet for introduction of said solids into the liquid, and outlet for discharging the slurry formed thereby;
a conduit for transporting said solids from said metering means to said eductor;
a first power actuated valve in said conduit;
a pressure liquid line connected to pressure liquid inlet of eductor;
a second power actuated valve in said pressure liquid line;
a first pressure sensor in said pressure liquid line;
a slurry discharge line from eductor outlet to a slurry using process;
a second pressure sensor in said slurry discharge line;



automatic cycle timer-controller means sequentially opening said second power actuated valve for a first predetermined time period, subsequently opening said first power actuated valve and activating said metering means, maintaining both said power actuated valves open and said metering means activated for a first controlled time period, subsequently closing first power actuated valve and deactivating said metering means for a second predetermined time period, subsequently closing said second power actuated valve, maintaining both power actuated valves closed and metering means deactivated for a second controlled time period, and thereafter, repeating automatic timer-controller sequence; and
automatic means for closing both power actuated valves and deactivating said metering means when said first pressure sensor measures pressure lower than a first preset value or when said second pressure sensor measures pressure higher than a second preset valve or when the measured pressure difference between the first and second pressure sensors is less than a third preset value.

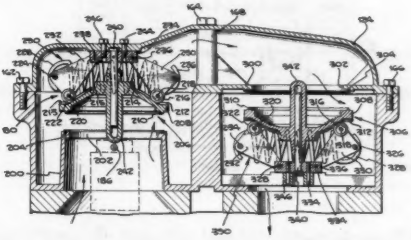
4,357,954

BACKFLOW PREVENTING VALVE CONSTRUCTION

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, Minneapolis, Minn.

Filed Jul. 21, 1980, Ser. No. 170,854
Int. Cl.³ F16K *24/00*
U.S. Cl. 137—218 **15 Claims**

7. In a backflow preventing valve having a body with an inlet passage for connection to a source of fluid, an intermediate chamber fluidly connected to said inlet passage via an inlet check valve, an outlet passage fluidly connected to said intermediate chamber via an outlet check valve for connection to a receiver of fluid, an exhaust valve connected to said inlet passage and to said intermediate chamber which vents fluid in said intermediate chamber to the atmosphere when the pressure of fluid in said intermediate chamber is equal to the pressure of said fluid in said inlet passage, the improvement in each check valve comprising:
valve port means;
valve seat means for movement between open and closed positions relative to said port means, said seat means including a frustoconical surface and an axial cavity;
valve closing means, for urging said seat member to a valve closed position, said closing means including:
stationary shaft means for sliding engagement with said axial cavity;
roller means for rolling engagement with said frustoconical surface;



arm means, for positioning said roller means against said seat means; and
spring means for biasing said roller means against said frustoconical surface, whereby:
(i) said outlet check valve seat means is urged to said valve closed position by said outlet valve spring means when the fluid pressure in said intermediate chamber is less than the fluid pressure in said outlet passage plus the biasing force provided by said outlet valve spring means and applied to said seat means by said roller means, and
(ii) said inlet valve seat means is urged to said valve closed position by said inlet check valve spring means when the fluid pressure in said inlet passage is less than the fluid pressure in said intermediate chamber plus the biasing force of said inlet check valve spring means.

4,357,955

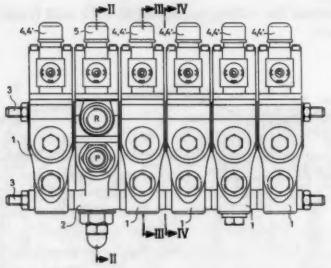
ELECTROHYDRAULIC CONTROL ARRANGEMENT

Ivan Sauer, Hausach, Fed. Rep. of Germany, assignor to Erwin Hengstler Hydraulik GmbH, Hausach, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,912
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943256
Int. Cl.³ F15B *13/08*
U.S. Cl. 137—270 **41 Claims**

1. An electrohydraulic control arrangement, comprising at least one terminal plate having an inlet port connected to a source of pressure fluid and an outlet port connected to a return conduit leading to a tank; a plurality of consumer plates fluid, said plates being arranged side by side in abutting relationship and being each formed with a plurality of bores axially aligned with the bores in the other plates and with a plurality of fluid channels therethrough axially aligned with the fluid channels in the other plates, said fluid channels being respectively adapted to communicate in said terminal plate with said inlet, respectively, said outlet port and in the consumer plate with said consumer ports, said fluid channels and said bores being respectively symmetrically arranged with respect to a plane of symmetry in said plates; and a plurality of tightening screws respectively extending through said aligned bores for holding said plates in tight abutting relationship, each of said

plates being provided with a bore therethrough substantially normal to said plane of symmetry and including a spring-loaded control slide means axially movably guided in said bore between two end positions and a pair of closure screws at opposite ends of the bore and forming stops for limiting axial movement of the control slide means, said control slide means in each of said plates having a pair of opposite end faces and being formed with axial passage extending from one to the other of said end faces, the control slide means of each said consumer plate further having a transverse passage providing communication between the axial passage of the control slide means of the respective consumer plate and that fluid channel



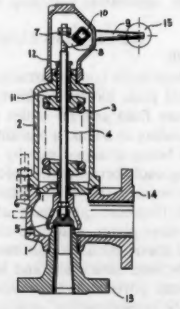
which communicates with said inlet port, the control slide means of the terminal plate having in the region of one end face thereof a transverse bore communicating with the axial passage of the control slide means of the terminal plate, and said terminal plate being formed with passage means forming in one end position of said control slide means of the terminal plate a connection between said inlet port and said transverse bore and in the other end position of said control slide means of the terminal plate a connection between said inlet port and a fluid channel connectable in each said consumer plate to the consumer outlet, and throttle means in said control slide of the terminal plate for establishing the connection prior to the establishing thereof by said transverse bore.

4,357,956

SAFETY VALVE WITH VIBRATION-DAMPED VALVE SPRING

Hans Anselmann, Ladenburg, and Kurt Mayer, Worms, both of Fed. Rep. of Germany, assignors to Bopp & Reuther GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 12, 1980, Ser. No. 178,707
Int. Cl.³ F16K *15/06*
U.S. Cl. 137—514 **8 Claims**



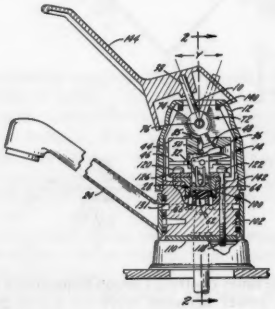
1. A safety valve, comprising a housing having inlet and outlet means; a valve spindle; a valve member mounted on said valve spindle and movable together with the latter between an open position in which it allows communication between said inlet and outlet means, and a closed position in which it interrupts the same; a valve spring urging said valve member to said closed position and having a tendency to vibrate during the operation of the valve; lifting means arranged to lift said valve spindle and thereby said valve member to said open position and having a lifting lever; and means for damping the vibrations of said valve spring during the operation of the valve, said damping means including a vibration-disturbing element formed as a damping weight which is provided on said lifting lever of said lifting means and constantly urges said lifting lever and thereby said valve spindle together with said valve member to said open position.

4,357,957

SINGLE LEVER FAUCET—SLIDING WEDGE OPERATION MECHANISM

Rudy Y. Bisonaya, Elmhurst, and Gerald J. Farrell, Oaklawn, both of Ill., assignors to Elkay Manufacturing Company, Broadview, Ill.

Filed Dec. 23, 1980, Ser. No. 220,265
Int. Cl.³ F16K *11/14*
U.S. Cl. 137—636.1 **13 Claims**



1. A single lever faucet comprising a housing having inlet means for cold and hot water and a mixing chamber, outlet means, individual cold and hot water valve means for controlling water flow from said inlet means to said mixing chamber including parallel plungers slidably mounted in said housing for controlled displacement to actuate said valve means,

lever means having one end extending from said housing mounted in said housing for pivotal movement in two orthogonally related directions and combinations thereof,

cam means for displacing said plungers, said cam means comprising a wedge actuator connected to be moved in said two directions and combinations thereof by said lever means upon movement of said one end of said lever means extending from said housing,

mounting means in said housing for said wedge actuator, said mounting means permitting planar sliding movement transverse to the axis of said plungers in said two directions and combinations thereof responsive to pivotal movement of said lever means, said wedge actuator having sliding movement in one direction for adjusting the volume of water flow by said valve means and in an orthogonal direction for adjusting relative proportions of water flow by said valve means, said wedge actuator being restrained against rotation,

said wedge actuator having substantially flat cam surfaces respectively engaging the ends of said plungers,

said respective cam surfaces being inclined in said two directions, being similarly inclined in said volume adjusting direction and oppositely inclined in said proportion adjusting direction,

the ends of said plungers being in face-to-face contact with said cam surface.

4,357,958

NON-RETURN VALVES

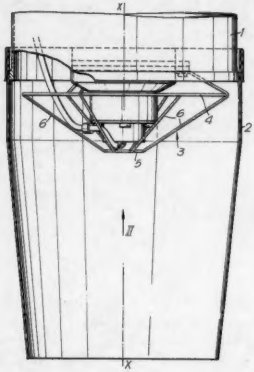
Colin C. Johnson, Woodford, England, assignor to British Aerospace Public Limited Company, Weybridge, England

Filed Oct. 24, 1980, Ser. No. 200,586

Claims priority, application United Kingdom, Oct. 31, 1979, 7937770

Int. Cl.³ F16K *15/14*

U.S. Cl. 137—846 9 Claims



1. A non-return valve which comprises a relatively inflexible valve body, valve closure means formed by an inflatable sleeve of relatively thin flexible but impermeable sheet material and closure support means, the valve body supporting the upstream end of the valve closure means, the valve body and the valve closure means together defining a fluid passage, the closure support means being of open-frame skeletal structure and arranged wholly within the fluid passage with a major portion of the valve closure means lying downstream of the closure support means, so that forward flow from the upstream end of the valve closure means to the downstream end causes the valve closure means to inflate and allow relatively unimpeded flow therethrough whilst reverse flow causes the valve closure means substantially sealingly to collapse upon itself and the closure support means.

4,357,959

BACK FLOW VALVE

Earl B. Shetler, 9508 Tuscola Rd., Clio, Mich. 48420

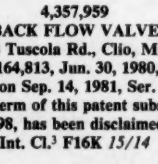
Division of Ser. No. 164,813, Jun. 30, 1980, Pat. No. 4,290,454.

This application Sep. 14, 1981, Ser. No. 302,042

The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.³ F16K *15/14*

U.S. Cl. 137—853 4 Claims



1. A back flow valve comprising

a housing having an inlet and an outlet,

a tube mounted in said housing and having an open end communicating with the inlet to said housing,

said tube having the other end thereof closed,

said tube having a plurality of circumferentially and longitudinally spaced openings at the center thereof such that fluid can only flow from the inlet to said housing through said openings to the outlet of said housing,

an elastic sleeve telescoped over said tube and normally closing said openings,

the inside diameter of said sleeve being less than the outer diameter of said tube,

said tube having longitudinally spaced abutments adjacent the ends of said sleeve,

the length of said sleeve being less than the longitudinal distance between said abutments,

said holes having their axes forming an angle with a radius and are all inclined in the same direction so that flow of water therethrough tends to rotate said sleeve about the axis of said tube.

4,357,960

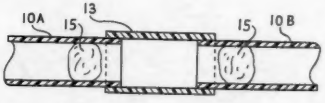
PLUMBING METHOD AND COMPOSITION FOR USE IN SAME

Helen Han, San Jose, Calif., assignor to Arthur S. Bittinger, Walnut Creek, Calif.

Filed Mar. 24, 1977, Ser. No. 780,754

Int. Cl.³ F16L *55/00;* F16K *13/04*

U.S. Cl. 138—97 2 Claims



1. A method of applying a sleeve-like connection between the spaced open ends of a cut pipe, said method comprising inserting into at least one of the open ends of the pipe a plug of plastic material formed of a mixture of a water soluble alginate and bentonite and of a size and shape to conform to the interior size and shape of the pipe to form a watertight seal, such plug having the property of sealing the pipe but of disintegrating readily upon flow of water in the pipe, then applying such a sleeve-like connection between the ends of the pipe by fitting it over the end portions of the pipe, sealing the resulting joints and thereafter causing flow of water in the pipe to disintegrate the plug or plugs and flush the same out of the pipe.

4,357,961

PIPELINE REPAIR KIT

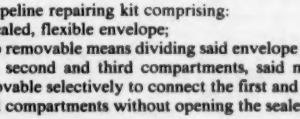
Douglas K. Chick, Bayshill Cottage, Barnett La., Ellstreet, Hertfordshire, England

Filed Mar. 10, 1980, Ser. No. 128,588

Claims priority, application United Kingdom, May 14, 1975, 20248/75

Int. Cl.³ F16L *55/18*

U.S. Cl. 138—97 1 Claim



1. A pipeline repairing kit comprising:

(a) a sealed, flexible envelope;

(b) two removable means dividing said envelope into at least first, second and third compartments, said means being removable selectively to connect the first and second and third compartments without opening the sealed envelope;

(c) measured quantities of the parts of a two-part curable resin system in the first and second compartments; and

(d) an enlongated flexible bandage member made of absorbent material disposed in said third compartment, said member including an integral closeable vent,

whereby an elongated resin-soaked flexible bandage member adapted for wrapping around a pipeline can be provided by first removing the removable means between said first and second compartments to thereby mix the parts of the resin system, next removing the other removable means and bringing the mixed resin into intimate contact with said elongated flexible member, and then manually manipulating the envelope so as to thoroughly impregnate said bandage member with mixed resin before the envelope is opened.

4,357,962

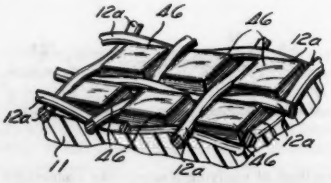
METHOD AND APPARATUS FOR PRODUCING TUBULAR ARTICLE

William D. Shaw, deceased, late of Aurora, Ohio; First National Bank of Cobb County, executor, and Sharon G. Shaw, executrix

Division of Ser. No. 742,694, Nov. 17, 1976, Pat. No. 4,104,095. This application May 15, 1978, Ser. No. 906,231

Int. Cl.³ F16L *11/08*

U.S. Cl. 138—125 **10 Claims**



1. A seamless tubular article comprising a tubular liner having a cylindrical exterior surface, a fiber material disposed on said exterior surface of said liner, and a structural layer disposed on said fiber material, said tubular liner being of a thermoplastic material having a predetermined melt index number and a predetermined coefficient of thermal expansion, said exterior surface of said liner having nodules projecting radially outwardly into said fiber material, portions of said fiber material being disposed between said nodules radially inwardly from said nodules, said fiber material being mechanically locked to said exterior surface of said liner between said nodules, substantial portions of said fiber material being free of said liner and fully exposed to said structural layer, and said structural layer being bonded to said fiber material without any substantial bond to said liner, said fiber material providing substantially the entire connection between said liner and structural layer.

4,357,963

LOOM WITH WEFT PICKING BY A FLOWING MEDIUM

Walter Scheffel, Hopfenstr. 22, 8832 Weissenburg/Bayern, Fed. Rep. of Germany

Filed May 16, 1980, Ser. No. 150,359

Int. Cl.³ D03D *47/28*

U.S. Cl. 139—435 **3 Claims**

1. A loom with weft thread picking by a flowing medium comprising:

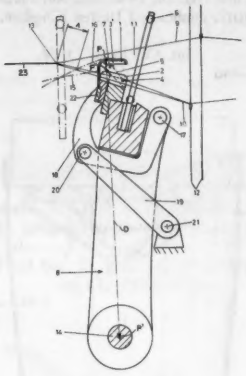
a sley mounted on said loom and pivotable about a sley axis;

a reed mounted on said sley;

a plurality of first guide plates fixedly mounted on said sley adjacent said reed;

a plurality of second guide plates movably mounted on said sley, interdigitating with said first guide plates and movable relative thereto during movement of said sley, said first and second guide plates forming lower and upper limits of a guide channel having a central axis of said weft thread when said sley is in a weft insertion position;

flow discharge openings formed in a plurality of said first plates for directing said flowing medium toward said central axis in a downstream direction relative to the insertion of said weft thread for entraining same when said sley is in said weft insertion position; and



a lever linkage on said sley coupled with said second guide plates for swinging same relative to said sley along an arcuate path intersecting the path of said first guide plates during pivotable displacement of said sley about said sley axis into said position.

4,357,964

THREADED LIGHT METAL GRIPPER WITH REINFORCEMENT RIB

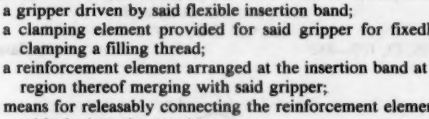
Lothar Köhler, Tann-Rüti, Switzerland, assignor to Rüti Machinery Works Ltd., Rüti, Switzerland

Filed Aug. 18, 1980, Ser. No. 179,105

Claims priority, application Switzerland, Sep. 5, 1979, 8030/79

Int. Cl.³ D03D *47/20*

U.S. Cl. 139—448 **11 Claims**



1. A filling thread-insertion element for looms working with removal of the filling thread from stationary bobbins, comprising:

a flexible insertion band;

a gripper driven by said flexible insertion band;

a clamping element provided for said gripper for fixedly clamping a filling thread;

a reinforcement element arranged at the insertion band at a region thereof merging with said gripper;

means for releasably connecting the reinforcement element with the insertion band;

means for releasably connecting said gripper with said reinforcement element and said insertion band;

said gripper being formed of a material having a specific weight which is lower than the specific weight of steel;

an insert element provided for said gripper at the region of its clamping element; and

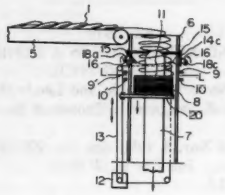
said insert element being formed of a material which is wear-resistant in relation to the material from which there is formed said gripper.

4,357,965

METHOD AND APPARATUS FOR GATHERING A RING SHAPED WIRE ROD

Yasuo Kosuge, Kimitsu; Masamori Yakabe, Kisarazu; Tadanori Oga, Kisarazu, and Toru Maeda, Kisarazu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 10, 1980, Ser. No. 138,917
Claims priority, application Japan, Apr. 13, 1979, 54/45034
Int. Cl.³ B21F 3/04
U.S. Cl. 140—2 2 Claims



1. In a method for gathering a ring shaped wire rod, wherein the ring shaped wire rod is continuously conveyed, dropped from a conveying device onto a coil plate, for carrying said ring shaped wire rod, in a gathering tub, and gathered in the form of a coil,

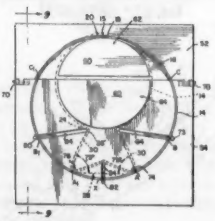
the improvement which comprises: (1) controlling the lowering speed of said coil plate, which is vertically displaceable in said gathering tub, by optically detecting the piling position of the ring shaped wire and thereby adjusting the coil plate in accordance with the detecting of the piling position in a manner such that the piling position of said rings of the ring shaped wire rod is always within a predetermined range, and further, (2) engaging and dropping said ring shaped wire rod, while imparting a movement having a horizontal component to said ring shaped wire rod above said piling position, by advancing and retracting a plurality of levers arranged symmetrically around a sail of the gathering tub whereby the rings of said ring shaped wire rod are radially displaced from the center of a sail in a manner such that the shape of said coil is symmetric around its center.

4,357,966

METHOD AND APPARATUS FOR MAKING FLORAL BASKETS

Stanley E. Williams, McLeansboro, Ill., assignor to George Koch Sons, Inc., Evansville, Ind.

Division of Ser. No. 77,126, Sep. 19, 1979. This application May 1, 1981, Ser. No. 259,479
Int. Cl.³ B21F 45/00
U.S. Cl. 140—71 R 13 Claims



1. In a method of making a collapsible florist stand, the steps comprising forming two generally rounded loops from a single wire generally in a single plane, the wire at the end of one loop being wrapped about the wire of the other loop to form a handle by retaining a portion of the two loops together, positioning the wire loops about a generally rounded mandrel and two spaced posts located outside and spaced from the rounded mandrel with the handle portion adjacent the mandrel, bending the two loops adjacent the handle portion generally against the rounded mandrel by forcing the wire loops inwardly against the mandrel at two points between the mandrel and the spaced posts to complete formation of the handle portion, and bending the two loops generally in the direction of the mandrel at a point between the two spaced posts to form four support points, and bending the portion of the two wire loops adjacent the spaced posts and outside of the handle portion apart to form a four point base.

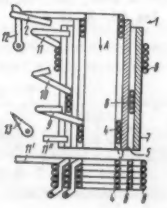
2. Apparatus for the manufacture of a collapsible florist stand from two wire loops comprising a stationary portion and a bifurcated portion including juxtaposed members capable of pivoted movement into two positions at an acute angular relationship with respect to one another, the bifurcated portion being capable of holding and bending one loop to one position and the other wire loop to the other position, a mandrel with a generally rounded portion on the apparatus, two stationary posts located at the bifurcated portion spaced equally from an axis that bisects the generally rounded mandrel, two wire bending posts that are located in the bifurcated portion between the generally rounded mandrel and the stationary posts and that extend through slots in the bifurcated portion and are drivable in the direction of the rounded mandrel and a third wire bending post that is located between the two stationary posts and that extends though a slot in the bifurcated portion and is drivable in the direction of the rounded mandrel, first manipulation means to drive the three wire bending posts in the direction of the rounded mandrel and second means to move the bifurcated portion of the apparatus into an angular relationship, whereby two wire loops, positioned on the apparatus about the rounded mandrel and the stationary loops and within the three wire bending posts, are bent into a collapsible florist stand with a rounded handle portion and four container support points, by operation of the first means and the two loops are sprung apart to form a four point base by operation of the second means.

4,357,967

METHOD FOR MAKING COIL GROUPS OF ELECTRIC MACHINES

Isaak Y. Feldshtein, ulitsa Rymarskaya, 23, kv. 5; Valery S. Epifanov, prospekt Traktorotroitelei, 65V, kv. 22; Vladimir N. Olefirenko, ulitsa Roberta Eidemana, 5, kv. 1; Jury I. Karelov, ulitsa Geroev Truda, 26, kv. 74; Alexandr A. Boyarsky, ulitsa Geroev Truda, 47a, kv. 57, and Alexandr N. Pashkov, pereulok Rubezhansky, 24, all of Kharkov, U.S.S.R.

Filed Apr. 28, 1980, Ser. No. 144,295
Int. Cl.³ B21F 3/00
U.S. Cl. 140—92.1 2 Claims



1. A method for manufacturing coil groups of electric machines, involving the use of a stepped former and comprising:

winding wire on each step of the stepped former to produce a coil of a preset length on each step of said former;

successively transferring the wire from one step of the former to another following a completion of each new coil;

transferring each coil along the step on which it is produced, as the winding of the wire continues on another step of the

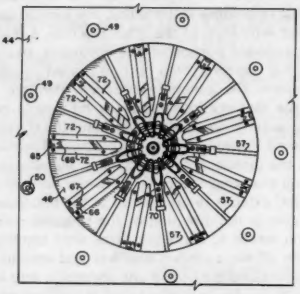
stepped former, by a pitch greater than the length of the coil for a subsequent transfer of the wire to the step vacated in the winding zone as a result of the coil transfer; unloading finished coils from the stepped former.

4,357,968

METHOD AND APPARATUS FOR FORMING MULTI-POLE WINDINGS

Vernon E. Kieffer, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 6, 1981, Ser. No. 222,833
Int. Cl.³ B21F *3/00*
U.S. Cl. 140—92.1 **18 Claims**



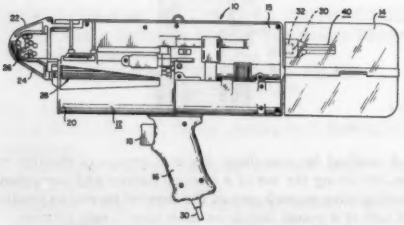
1. A method of winding a multi-pole stator comprising forming a skein of a multiplicity of turns of magnet wire; engaging the inner reaches of the skein with retaining jaws spaced from one another; moving forming tools simultaneously inwardly against the outer reach of the skeined wire between said retaining jaws while said retaining jaws move inwardly sufficiently to accommodate the effective shortening of the wire reaches to produce a petalled, serpentine coil form with a series of inwardly directed apices between said retaining jaws; inserting a holding pin between the said outer reach of the wire at each of said apices and the forming tools; retracting said forming tools, and, while said wire is held between said pins and said retaining jaws, loading said formed wire onto a transfer tool.

4,357,969

TIE DISCHARGE APPARATUS IN A BUNDLING TIE APPLYING TOOL

Joseph Peterpaul, West Orange, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Nov. 3, 1980, Ser. No. 203,690
Int. Cl.³ B21F *9/02*
U.S. Cl. 140—123.6 **17 Claims**



1. In a bundling tie applying tool of the type having a housing, a port of egress on said housing for the discharge of a severed bundling tie portion and means for ejecting said severed tie portion through said port of egress in a path of discharge, tie discharge apparatus comprising:

a member attached to said housing having a tie deflecting surface externally of said housing in said path of discharge; and

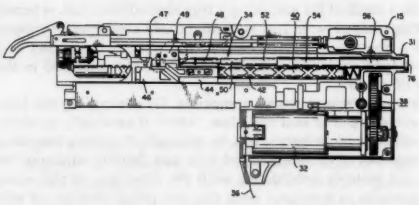
means communicating with said port of egress for permitting passage therethrough of a severed tie portion to said tie deflecting surface and for preventing the return of such severed tie portion to said port of egress.

4,357,970

TIE EJECTING APPARATUS IN A BUNDLING TIE APPLYING TOOL

Louis A. Netta, North Brunswick, and Laszlo Hidassy, Jamesburg, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Nov. 3, 1980, Ser. No. 203,695
Int. Cl.³ B21F *9/02*
U.S. Cl. 140—123.6 **23 Claims**



1. In a bundling tie applying tool for installing an elongate bundling tie about a plurality of articles to be bundled, said tool being of the type having a housing, means for severing a portion of said tie positioned about said articles and a port of egress on said housing for the discharge of said severed tie portion, tie ejecting apparatus comprising:

means within said housing defining an enclosed course extending from said severing means to said port of egress for receiving and containing therein a severed tie portion; and

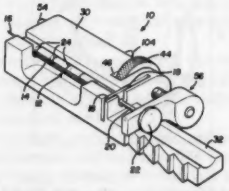
plunger means movable within said enclosed course to a position closely adjacent said port of egress for engaging and pushing therethrough a severed tie portion positioned in said enclosed course.

4,357,971

SYRINGE GAUGING, LOADING AND INJECTION APPARATUS

Eliot I. Friedman, Ann Arbor, Mich., assignor to Cyberon Corporation, Ann Arbor, Mich.

Filed Sep. 19, 1980, Ser. No. 188,739
Int. Cl.³ B65B *3/32*
U.S. Cl. 141—27 **7 Claims**



1. In a syringe gauging, loading and injection apparatus for a conventional syringe of the barrel and plunger type, said apparatus including a body for releasably supporting a syringe and an adjustable stop member for limiting the travel of the syringe plunger, the improvement comprising:

said body including aligning means for supporting said syringe with said syringe barrel in a fixed position relative to said body and with said syringe needle extending clear of said body;

means for adjusting the position of said stop member relative to said fixed barrel position so that said stop member may be used to vary the dosage of the syringe;

said stop member position adjusting means including means for producing first audible and first tactile stimuli upon increasing the distance between said fixed barrel position and said stop member;

said stimuli producing means also producing second audible and second tactile stimuli upon decreasing the distance between said fixed barrel position and said stop member;

said first audible and tactile stimuli being of a different intensity than said second audible and tactile stimuli;

said adjustable stop member having an operative position and an inoperative position;

means for movably mounting said stop member so that said stop member may be moved between said operative and inoperative positions;

said stop member inoperative position being free of engagement will said plunger for allowing alternate filling of said syringe and thereafter emptying of said syringe by movement of said plunger;

said stop member operative position for limiting the extent of travel of said syringe plunger toward said syringe barrel fixed position for allowing partial emptying of said syringe so that the contents of the syringe may be reduced to the desired dosage and also to expel any air in said syringe prior to injecting said dosage; and

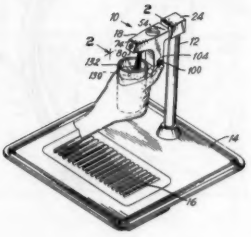
said apparatus body for also supporting said syringe while said dosage is being injected.

4,357,972

WATER GLASS FILLER

Joseph N. Villa, Freehold, N.J., assignor to Standard-Keil Hardware Manufacturing Company, a Division of Buildex Incorporated, Del.

Filed Jan. 17, 1980, Ser. No. 112,885
Int. Cl.³ B65B *3/36*
U.S. Cl. 141—351 **12 Claims**



1. A water glass filler comprising:

a body, said body having an inlet duct for water and a discharge duct for water;

a flow valve, said flow valve being intermediate said inlet and outlet ducts for water, a closed condition of said flow valve preventing flow from said inlet to said outlet duct, an open condition of said valve permitting flow from said inlet to said outlet duct;

movable means displacable in a first direction for opening said flow valve in response to an external force applied thereto in said first direction, and displacable in a second direction for closing said flow valve in response to the removal of said external force, whereby flow on demand is provided;

first bias means biasing said movable means in said second direction to normally close said flow means upon removal of said external force;

latching means displacable between a first unlatched position and a second position at which it is engaged by said movable means after said external force is removed while said valve is open for preventing said closing of said flow valve, whereby continuous flow is provided; and

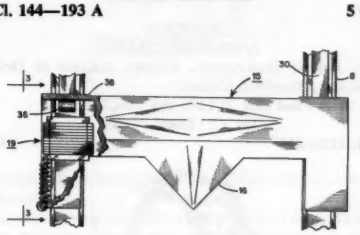
second bias means for biasing said latching means toward its first position so that upon the reapplication of said external force in said first direction to said movable means to disengage said latching means from said movable means, displacement of said latching means to its first position in response to said second bias means is permitted to free said movable means for displacement in its second direction in response to said first bias means whereby a flow-on demand mode of operation is initiated, and a continuous-flow mode of operation is terminated by similar force applications.

4,357,973

LOG SPLITTER WITH COUNTER-BALANCED WEDGE ASSEMBLY

Michel A. Pierrat, 48 Farrwood Dr., Andover, Mass. 01810

Filed Jul. 7, 1980, Ser. No. 166,053
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **5 Claims**



1. In a log splitter having

a frame including a first stanchion having a vertical channel therein,

a support mounted on said frame for supporting a log to be split,

a wedge assembly mounted for vertical movement on said frame, and

drive means arranged to cause relative closing movement between said wedge assembly and said support thereby to cause said wedge assembly to split said log,

the improvement comprising

force generating means comprising a constant-force spring positioned within said channel,

means connecting said force generating means to said wedge assembly, and

means connecting said force-generating means to said frame,

said force generating means being arranged to apply continual upward force to said wedge assembly relative to said frame.

4,357,974

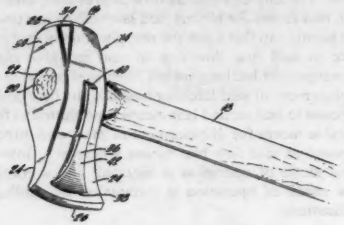
WOOD SPLITTING MAUL

Jack W. Nannen, 2712 Orchard La., Mount Penn, Pa. 19606

Filed Sep. 2, 1980, Ser. No. 183,307
Int. Cl.³ B26B *23/00*
U.S. Cl. 145—2 R **4 Claims**

1. A maul head for a wood splitting maul comprising opposed side faces converging toward one end to form a cutting edge, a transverse bore in said head adapted to receive one end of a handle, said handle bore being substantially spaced from and having an axis lying in the same plane as said cutting edge, said handle bore being located in the region of maximum thickness of said maul head, the width of said faces at said cutting edge exceeding the width of said faces at the handle bore, a raised ear disposed centrally on each said side face, each said

ear extending longitudinally from a leading edge to a trailing edge along said side face, the width of each said ear throughout its length being substantially narrower than the width of the side face, the leading edge of each said ear being substantially parallel to and substantially spaced longitudinally from said



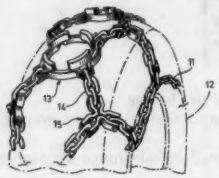
cutting edge, each said ear tapering in thickness adjacent its leading edge to provide a wedge-shaped entry portion, the distance between the outer faces of said ears progressively increasing from the leading edges to the trailing edges of said ears.

4,357,975

ANTI-SKID CHAIN

John F. Baldry, Shakespeare, Canada, assignor to Dominion Chain Inc., Stratford, Canada

Filed Oct. 2, 1980, Ser. No. 193,157
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—223 **9 Claims**



1. An anti-skid tire chain comprising a pair of parallel side chains, a series of traction rings extending medially between the side chains, and a network of connector chains interconnecting the traction rings with the side chains and with one another, characterized in that the connector chains are interconnected in threes by triradial connector elements constituting auxiliary traction elements arranged in two rows extending parallel to the side chains on either side of the series of traction rings, each having a symmetrical triradial configuration providing three radially extending pairs of parallel lugs, the lugs of each pair providing respective ground-engaging edges and defining a clevis for receiving an end link of a respective connector chain, and including a removable clevis for retaining said end link.

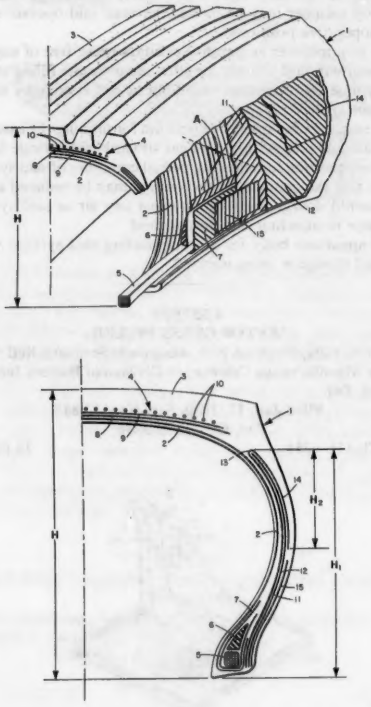
4,357,976

RADIAL TIRES COMPRISING REINFORCEMENTS IN THE SIDEWALLS

Mario Mezzanotte, Milan, and Gianni Turchetti, Bresso, both of Italy, assignors to Societa' Pneumatici Pirelli S.p.A., Milan, Italy

Filed Apr. 10, 1981, Ser. No. 252,865
Claims priority, application Italy, Apr. 10, 1979, 21708 A/79
Int. Cl.³ B60C *5/00*
U.S. Cl. 152—354 RB **10 Claims**

1. A pneumatic tire for motor vehicles comprising two sidewalls, a crown portion having shoulders which are integral with the sidewalls, an annular bead core in each sidewall for securing the tire to a tire rim, a carcass having cords disposed substantially in radial planes and having opposite ends turned up about said bead cores, a tread on said crown, an annular reinforcing structure disposed between the tread and carcass, each of said sidewalls comprising at least two layers consisting essentially of metal cords, a first of said layers being disposed in the sidewalls axially outside of the carcass and a second of said layers disposed axially outside of the said first layer in the sidewall, said cords in each of said layers being inclined at an angle with respect to the direction of the carcass cords, the cords of one of said layers crossing the cords of the other of said layers, said first layer of cords being arranged axially outside the said turned-up ends of the carcass cords and extending through the sidewall to the said shoulder, said first layer having its end turned-up with an overlay of from the said shoulder to a point that is from 20% to 60% of the height of the tire section, said second layer being positioned axially outside



of the first layer in the sidewall and axially inside of the turned-up portion of the first layer in said shoulder and extending radially from the shoulder toward the bead core for a height which is more than 50% of the tire section height.

9. A pneumatic tire for motor vehicle wheel having an annular carcass comprising substantially parallel radial extending cords, and having radially spaced carcass edges, a crown integral with both sidewalls and spanning the space between the said edges, annular beads comprising bead cores disposed adjacent to said edges of the sidewalls, a tread on said crown's external surface, and a shoulder joining the crown to each sidewall, an annular reinforcing member for the tread disposed in said crown between the tread and carcass and extending from adjacent to a first shoulder across the crown to adjacent to a second shoulder, said annular reinforcing member comprising a first layer of metallic cords parallel to each other and

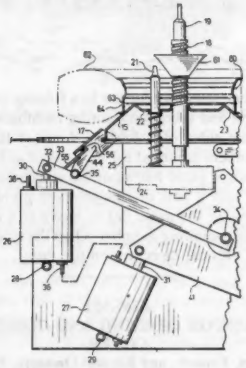
disposed at an angle of 15°–35° with the equatorial plane of the tire, a second layer of metallic cords parallel to each other disposed radially out from the said first layer and symmetrically inclined with the cords of said first layer, and a third layer radially outside the said second layer and comprisng heat shrinkable textile cords parallel to each other and to the equatorial plane of the tire, and means for stiffening each of said sidewalls to resist deformation by lateral forces comprising first and second layers of metallic cords disposed in each sidewall between said bead core and said shoulder, said first layer being axially inside of said second layer, said second layer of sidewall reinforcement cords extending radially outwardly from adjacent the bead core to the shoulder, said first layer being wound over the edge of the second layer in the shoulder and overlapping itself a distance of 20–60% of the total section height of the tire, and a layer of heat shrinkable textile cords wrapped around the bead core axially inside said first layer of sidewall reinforcing cords forming a flipper structure in the sidewall adjacent to the bead core.

4,357,977

BEAD BREAKING MECHANISM

Leslie Bubik, Toronto, Canada, assignor to FMC Corporation, Chicago, Ill.

Filed Feb. 19, 1980, Ser. No. 122,326
Int. Cl.³ B60C *25/06*
U.S. Cl. 157—1.28 **21 Claims**



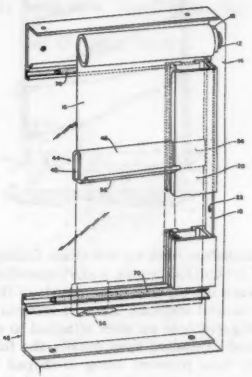
1. For use in a machine for removing a vehicle tire from a wheel rim, a bead-breaking shoe adapted to ride over a wheel rim together with a rim support table for mounting the wheel rim, said shoe comprising a leading edge and an upper surface on the bead breaking shoe, said leading edge being curved about a vertical axis and said upper surface defining a curve about an axis downwardly inclined to said vertical axis, said rim support table having a lower portion having a radius which is less than the radius of the curve of said leading edge and which is greater than the curve about said axis downwardly inclined to said vertical axis, said leading edge having a center of curvature which is on the side of said rim support table center of curvature which is remote from said leading edge, and means for pivotally mounting said shoe.

4,357,978

ROLLER SHADE SEAL SYSTEM

Robert R. Keller; Richard Steinberg, and John P. Whittemore, all of Bedford, N.H., assignors to Keller Products, Inc., Manchester, N.H.

Continuation-in-part of Ser. No. 155,192, Jun. 2, 1980. This application Mar. 19, 1981, Ser. No. 245,595
Int. Cl.³ E06B *7/16*
U.S. Cl. 160—41 **10 Claims**



1. A roller shade seal system for a window shade comprising in combination:

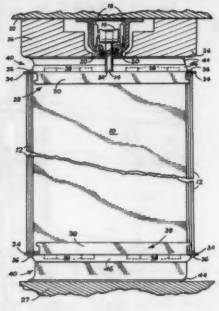
a pair of edge seal assemblies in the form of elongate mounting strip members, adapted to be mounted to opposite faces of the window frame trim, and a pair of sealing strip members in the form of elongate, generally U-shaped channels adapted to sealably engage lateral edges of a said shade;

elongate snap-coupling means extending the length of said edge seal assemblies for releasably mounting each of said sealing strip members to an associated mounting strip member, adapted for mounting either one of said members within a window frame opening and on the surface of a window frame opening, said snap-coupling means comprising elongate bead means and socket means with the mounting strip members carrying one of the bead means and socket means while the sealing strip members carry the other of the bead means and socket means, the mounting strip members being reversible for alternative mounting in a window frame opening and on the face of a window frame opening, the socket means and bead means projecting from their respective carrying members at approximately 45° to the plane to be occupied by the shade, thereby to provide the alternative mounting wherein said bead means and socket means are adapted to accommodate up to approximately 30° of angular misalignment of a sealing strip member to a mounting strip member, mounted thereto, about the longitudinal direction of said bead means;

a shade bottom edge seal assembly comprising a rigid bottom strip reinforcing member for mounting onto the bottom end of a said shade; and a window sill sealing strip means adapted and arranged to cooperate with said shade bottom reinforcing member to provide a seal at said window sill; and

a shade top seal having mounted thereon a resiliently deformable sealing means for sealably engaging the outer turn of a said shade adjacent the roller end.

4,357,979
SKIRTED ACCORDION FOLDING DOORS
John D. Marontate, Box 346, Forest Grove, Oreg. 97116
Filed Mar. 12, 1981, Ser. No. 243,129
Int. Cl.[3] A47H 5/00
U.S. Cl. 160—84 R 3 Claims



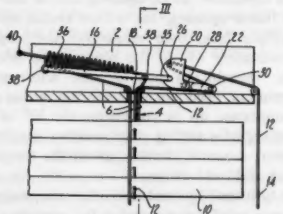
1. In combination with an accordion folding door having a plurality of articulated panels, a skirt assembly for sealing the spaces between the top and bottom ends of the panels and the adjacent structural surfaces, the skirt assembly comprising:

(a) an elongated base member attached to each end of each panel and extending substantially the full length of said end, the base member being U-shaped in cross section having spaced side walls extending along the sides of the panel and a connecting outside wall extending across the end of the panel,

(b) seal strip support means comprising a pair of laterally spaced tabs extending outwardly from the outside wall of the base member and having inwardly projecting outer ends, the spaced tabs defining a guide groove between them extending in the longitudinal direction of the base member, and

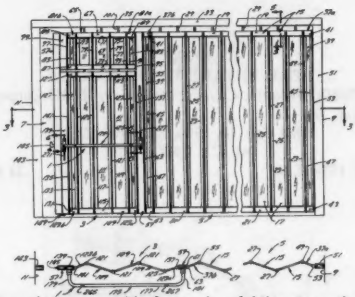
(c) an elongated flexible seal strip extending substantially the full length of the base member and including an enlarged bead along one edge received slidably through the guide groove defined by the spaced tabs, the seal strip extending outwardly between the spaced tabs substantially to the adjacent structural surface.

4,357,980
VENETIAN BLIND
Clifton Rapp, Box 12, S-340 15 Vittaryd, Sweden
Filed Sep. 23, 1980, Ser. No. 190,076
Int. Cl.[3] E06B 9/30, 9/26
U.S. Cl. 160—168 R 10 Claims



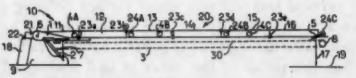
1. A Venetian blind comprising a head bar, ladders each comprising two vertical cords and cross portions connecting the cords, slats supported by the ladder substantially parallel with the head bar and an operating device for tilting the slats by displacing the vertical cords of each ladder in relation to each other, the operating device comprising an operating element which is displaceable in the longitudinal direction of the head bar and to which the cords of the ladders are connected, the displacement of the cords for providing the tilting of the slats being obtained by the displacement of the operating element in the longitudinal direction of the head bar, characterized in that the operating device comprises a linkage connected between the head bar and the operating element and adapted to pivot to provide for a displacement of the operating element between a first position, wherein the slats are tilted in a first direction, and a second position, wherein the slats are tilted in an opposite direction, and wherein the linkage comprises a first link element which is pivotable in relation to a second link element in that the second link element is pivotable in relation to the head bar.

4,357,981
PANIC BAR ASSEMBLY
Henri M. R. Labelle, 50 Westmooreland Ave., Cornwall, Ontario, Canada
Filed Mar. 6, 1980, Ser. No. 127,637
Int. Cl.[3] E05D 15/58; E06B 11/06
U.S. Cl. 160—183 10 Claims



1. A panic bar assembly for use in a folding door: the assembly having first and second mounting members adapted to be mounted at the sides of a folding door, at least one of the mounting members mounted for movement in a vertical direction on the door; a panic bar mounted at its ends to the mounting members; and a pair of spaced-apart pivot means in the panic bar allowing the panic bar to move as a result of movement of the one mounting member when the mounting member is moved in a vertical direction on the door.

4,357,982
APPARATUS FOR OPENING AND CLOSING HATCH COVER
Kikuo Yamada, Yamato, and Kiyoshi Onodera, Yokohama, both of Japan, assignors to MacGregor International S.A., Switzerland
Filed Sep. 3, 1981, Ser. No. 299,861
Claims priority, application Japan, Sep. 12, 1980, 55-125911
Int. Cl.[3] E05F 11/00
U.S. Cl. 160—188 3 Claims



1. Apparatus for opening and closing hatch covers of accordion type consisting of at least three cover panels having each

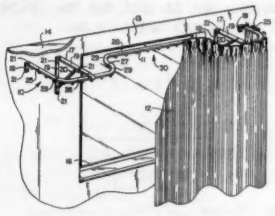
one end edge portion hingedly connected to those of adjacent cover panels and adapted to be folded together in accordion shape at a storage station with that so-called first cover panel which is located nearest to the storage station in closed condition of the hatch, being provided with arm members pivotally connected each one to the storage station, and comprising a pivot arm having one end pivotally mounted on a support table adjacent to the storage station and adapted to be swung reciprocatingly between a horizontal stand-by position below horizontal studs provided on at least one side surface of cover panels of odd numbers counted from said first panel and a vertical tilting position in which the pivot arm will tilt each panel of odd number into vertical position, means for actuating said pivot arm, such as hydraulic jacks, provided on the deck adjacent to said support table and having an operating end thereof connected to said pivot arm, and driving means, such as endless chain, means connected to a last cover panel remotest from the first panel and causing said last panel to be reciprocated between a hatch closing position and a storage position, said apparatus being characterized in that said pivot arm has a telescopic construction so as to permit its length from one end thereof connected to said support table to its opposite end to be selectively varied.

4,357,983

ENCOMPASS DRAPERY SUPPORT ASSEMBLY

William A. Hand, 3161 Sullivant Ave., Columbus, Ohio 43204

Filed Jan. 19, 1981, Ser. No. 226,423
Int. Cl.³ A47H *5/00*
U.S. Cl. 160—345 **6 Claims**



1. A drapery supporting assembly constructed to hold draperies or curtains in vertical parallel position relative to the vertical axis of the walls of a room, comprising:

(a) an elongated curvilinear shaped drapery support frame member, formed with end portions outstanding to the wall of the room, the end portions being connected to intermediate portions parallel to the wall of the room, the intermediate portions being connected to return portions formed toward the wall of the room, and a midportion connected between the return portions and substantially parallel to the wall of the room; the connections between the end portions, the intermediate portions, the return portions, and the mid-portions, being substantially archs of a circle;

(b) the drapery support frame member comprising a channel having parallel upper and lower sides connected by formed substantially curved or perpendicular ends, with a continuous aperture on the lower side throughout the length of the support frame, each arcuate connection between portions of the support frame having guide members within the channel and supported from the upper side, with a drapery cord positioned within the channel, guided by a guide members; and a plurality of slides are positioned and constructed to move within the aperture of the channel when connected to the drapery material, with the cord connected to at least one of the slides; and

(c) at least one wall bracket attached to the drapery frame member, having attachment means to the wall of the room;

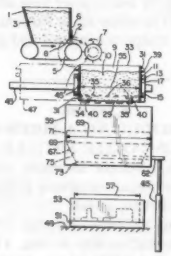
the return portons and midportion serving to encompass an object between the return portions.

4,357,984

METHOD AND APPARATUS FOR PRODUCING A FOUNDRY MOLD

Erwin Bührer, deceased, late of Schaffhausen, Switzerland (by Dora B. Bührer, heir); by Grete Brändli, heir, Samstagern; by Lotte Roth, heir, Effretikon, both of Switzerland, and by Doris Baumann, heir, London, England, assignors to Georg Fischer Aktiengesellschaft, Switzerland

Filed Oct. 31, 1980, Ser. No. 202,749
Claims priority, application Switzerland, Nov. 1, 1979, 9797/79
Int. Cl.³ B22C *15/00*
U.S. Cl. 164—37 **13 Claims**



1. A process for producing a foundary mold comprising the steps of

providing a molding box on a pattern plate for receiving molding sand,

providing an intermediate container to receive molding sand from a supply thereof, the intermediate container having an openable bottom closure,

precompacting the molding sand in the intermediate container;

locating the intermediate container above the molding box, and

abruptly opening the bottom closure of the intermediate container and suddenly releasing the body of sand contained therein so that the body of sand falls as a packet and is deposited in the molding box.

5. An improved apparatus for producing a foundry mold of the type having a pattern on a pattern plate and a molding box for receiving molding sand around the pattern, the apparatus being of the type having means for loading compact sand into the molding box including a molding sand silo, an intermediate container locatable below the silo and having an openable bottom closure, and drive means for opening and closing the closure, the improvement wherein

said intermediate container includes a movable frame;

and wherein said apparatus further comprises

means for forming a precompacted sand body in said intermediate container; and

means for abruptly changing the elevation of said intermediate container during opening of said bottom closure.

4,357,985

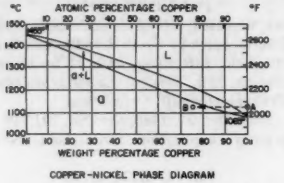
METHOD OF ISOTHERMALLY FORMING A COPPER BASE ALLOY FIBER REINFORCED COMPOSITE

Richard W. Sexton, Grove City, Ohio, assignor to Material Concepts, Inc., Columbus, Ohio

Filed Mar. 26, 1981, Ser. No. 247,657
Int. Cl.³ B22D *19/02*
U.S. Cl. 164—61 **7 Claims**

1. A method of forming a copper base alloy graphite fiber reinforced composite, comprising the steps of:

first coating said fiber with nickel, then coating said coated fiber with copper, heating said coated fiber in combination with a material selected from the group consisting of copper and copper base alloys to a temperature above the



COPPER-NICKEL PHASE DIAGRAM

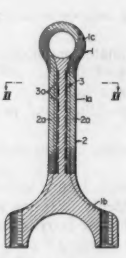
melting point of the material selected from the group consisting of copper and copper base alloys but below the melting point of the alloy to be formed, and holding said materials at said temperature until said alloy is formed and solidified.

4,357,986

METHOD OF PRODUCING A FIBER-REINFORCED COMPOSITE ARTICLE

Keisuke Ban, Fujimi; Akimasa Daimaru, Asaka, and Noriaki Miyake, Ueda, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,439
Claims priority, application Japan, Aug. 17, 1979, 54-104754
Int. Cl.³ B22D *18/02, 19/14*
U.S. Cl. 164—97 **10 Claims**



1. A method of producing a fiber-reinforced composite article comprising the steps of forming an assembly of a shaped fiber body of a predetermined shape from inorganic fibers with a tubular member in said shaped fiber body, said tubular member having an open end and a plurality of communication ports therein, and charging a molten matrix alloy by squeeze casting from the outside of said shaped fiber body and additionally from the inside of the shaped fiber body through said tubular member thereby to obtain the composite article.

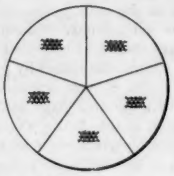
4,357,987

THERMAL STRESS-RESISTANT, ROTARY REGENERATOR TYPE CERAMIC HEAT EXCHANGER AND METHOD FOR PRODUCING SAME

Isao Oda, and Tadaaki Matsuhisa, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Division of Ser. No. 75,184, Sep. 13, 1979, Pat. No. 4,304,585. This application Jul. 27, 1981, Ser. No. 286,847
Claims priority, application Japan, Sep. 28, 1978, 53-118551
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—10 **2 Claims**

1. A rotary regenerator type ceramic heat exchanger comprising a plurality of ceramic honeycomb structural matrix segments bonded by a ceramic binder, said ceramic binder after the subsequent sintering having substantially the same mineral composition as said ceramic matrix segments and the



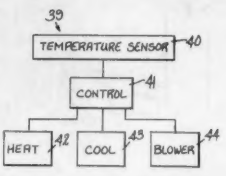
thickness of 0.1 to 6 mm, and a difference in thermal expansion being not greater than 0.1% at 800° C. relative to the ceramic matrix segments.

4,357,988

AIR-CONDITIONING/HEATING SYSTEM

David J. Hudson, Cheshire, and Willard P. Francis, West Haven, both of Conn., assignors to Safety Electrical Equipment Corp., Wallingford, Conn.

Continuation of Ser. No. 965,339, Dec. 1, 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,257
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—26 **6 Claims**

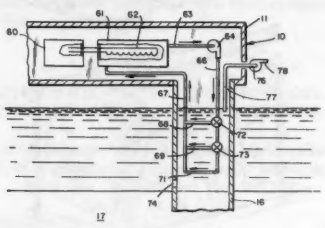


1. A heating and cooling system for a transit vehicle including a condenser, an evaporator, a compressor, and a compressor drive motor forming an air cooling system; a duct for moving air to be treated therethrough, said evaporator positioned in said duct, a driven blower in said duct, a drive motor for said blower, a heater in said duct, a second heating means, means for sensing the ambient temperature and generating a signal proportional thereto, control means for operating said heater, said second heating means, and said blower motor and compressor motor at low and high speeds of operation, said blower motor being operated continuously at least a low speed when said system is operating, said control means being effective to cause said heater, said second heating means to operate and said blower motor to operate when said temperature signal is below a first predetermined value, and to cease operation of said heater when the temperature signal exceeds said first predetermined value; said control means causing said second heating means to cease operation when said temperature signal reaches a second predetermined value; said control means causing said compressor motor and said blower to operate at low speeds when said temperature signal reaches a third predetermined value to increase the blower speed when said temperature signal reaches a fourth predetermined value and to operate said compressor motor and said blower motor to to operate at high speed when said temperature signal reaches a fifth predetermined value.

4,357,989
HEAT EXCHANGE CIRCUIT FOR AN OFFSHORE INSTALLATION

Ross G. Holzle, River Ridge, La., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,526
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—45 **9 Claims**



1. System for treating a process fluid at an offshore structure positioned in a body of water, and having at least one support member of said structure disposed in said body of water to maintain the structure's deck above the water's surface, and including;

first heat exchange means which is communicated with a source of said process fluid to circulate a stream of the latter,

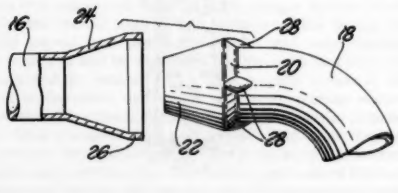
second heat exchange circuit disposed in heat exchange contact with said first heat exchange means, and circulating a stream of intermediate heat transfer fluid

and second heat exchange means communicated with said stream of intermediate heat transfer fluid being in heat exchange relation with said body of water.

4,357,990
CRIMPED TUBE JOINT-SHOULDER RIBS

William Melnyk, Lathrup Village, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jun. 8, 1981, Ser. No. 271,414
Int. Cl.³ F28F *9/26*
U.S. Cl. 165—76 **4 Claims**

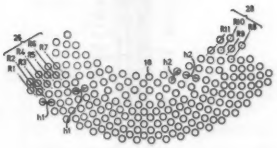


1. A heat exchanger assembly **(10)** including a heat transfer core **(12)** including a plurality of heat transfer fins **(14)** and a plurality of fluid carrying tubes **(16, 18)** extending through said fins **(14)** for defining a fluid circuit and connected together by at least one solderless tube-to-tube joint wherein a first of said tubes **(18)** includes an end having an annular outwardly extending shoulder **(20)** followed by an inwardly tapered frustoconical portion **(22)** and a second of said tubes **(16)** forming said joint includes an end having an outwardly flared portion **(24)** in mating engagement with said frustoconical portion **(22)** and an inwardly extending flange **(26)** crimped over said shoulder **(20)** for forcing said tapered frustoconical portion **(22)** into said flared portion **(24)**, said assembly characterized by at least one raised potion **(28)** extending from said shoulder **(20)** in the direction away from said frustoconical portion **(22)** and outwardly of said first tube **(18)**, said raised portion **(28)** being a bulbous gullet having a pointed nose joining said shoulder **(20)** and a pointed nose joining the exterior of said first tube **(18)**.

4,357,991
HEAT EXCHANGER HAVING IMPROVED TUBE LAYOUT

Gordon M. Cameron, Willowdale, Canada, assignor to C-I-L Inc., North York, Canada

Filed Feb. 11, 1980, Ser. No. 120,064
Claims priority, application Canada, Nov. 23, 1979, 340568
Int. Cl.³ F28D *7/10;* **F28F** *12/08*
U.S. Cl. 165—159 **12 Claims**



1. In a heat exchanger for exchanging heat between fluids and having a plurality of parallel tubes of circular cross-section, said tubes all having the same outer diameter, the improvement wherein said tubes are laid out according to the following relationship:

(1) said tubes are arranged with their centres located on a set of concentric circular arcs, said set comprising at least first, second and third such arcs, a plurality of tubes on each arc,

(2) the number of tubes in each arc differs from the number of tubes in each other arc by not more than one,

(3) the tubes in each arc are spaced uniformly apart along such arc,

(4) each tube in each arc, other than such end tubes as may be present in some of said arcs, is located circumferentially midway between the two adjacent tubes of each neighboring arc so that the centres of each such three tubes form an isosceles triangle, each tube in each arc being separated from each of said adjacent tubes in each adjacent arc by a diagonal ligament distance h, said distance h being constant for all said tubes, and

(5) the distance between each two adjacent tubes in any said arc is at least as great as twice said diagonal ligament distance h, so that the minimum cross-sectional area for radial fluid flow between adjacent arcs of said set is defined as to its circumferential dimension by the sum of said diagonal ligament distances h between the tubes of said adjacent arcs and is substantially constant independent of the radial position of said arcs.

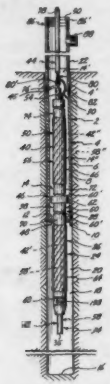
4,357,992
FLUID PRESSURIZATION APPARATUS AND TECHNIQUE

Gerald T. Sweeney, Puyallup, Wash., assignor to Tigre Tierra, Inc., Puyallup, Wash.

Filed Jan. 12, 1981, Ser. No. 224,637
Int. Cl.³ E21B *7/00, 23/06, 33/124, 33/126*
U.S. Cl. 166—250 **36 Claims**

1. A method of fluid pressurizing a portion of the wall of a

hole in the ground, comprising installing lengthwise in the hole in spaced relationship to the bottom thereof, an elongated rod having a hollow bore therethrough which is open ended at the proximal and distal ends thereof, inserting a plurality of inflatable closure members into the bore of the rod in tandem array through the proximal end opening thereof, and then inserting the relatively forward of said members into the hole through the distal end opening of the rod and positioning the same in the space between the rod and the bottom of the hole so as to leave a gap between one of said members and the bottom of the hole, inflating the respective closure members to form first and second fluid seals across the bore of the rod and that portion of



the hole in the space between the rod and the bottom of the hole, respectively, forming a third fluid seal across the proximal end portion of the bore in spaced relationship to the first fluid seal therein, forming a fluid connection between the portion of the bore in the space between the first and third fluid seals and a portion of the hole lying in the gap between the second fluid seal and the bottom of the hole, filling the interconnected portions of the bore and the hole with a fluid charge, applying pressure to the charge by means external thereof while exposing the wall of the hole in the gap to the fluid thereof, and monitoring conditions in the charge to determine the character of the ground surrounding the aforesaid portion of the hole in the gap.

4,357,993

ELEVATOR CAB CONSTRUCTION

Ernst Halpern, Plainview; Morris Kline, Dix Hills; Waldemar Guslawski, Bronx, and Gopal S. Kukke, Flushing, all of N.Y., assignors to Williamsburg Steel Products Co. Inc., Brooklyn, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,337
Int. Cl.³ B66B *9/00*
U.S. Cl. 187—1 R **10 Claims**

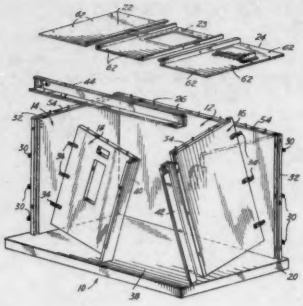
7. An elevator cab for attachment to an elevator platform, comprising:

a plurality of wall panels, said panels being positioned on said platform to form at least a portion of an elevator compartment, at least two of said wall panels being joined at right angles one to the other, the vertical end of the first said joined panel abutting the inside surface of the second said joined panel, the outside surface of said first panel being offset from the end of said second panel;

a vertical recess formed in said inside surface of said second joined panel, said abutting end of said first panel being received in said recess, whereby said joined panels are constrained to stand vertically;

a first engaging member fixedly attached to the external surface of said first panel and extending beyond said end of said panel, said first engaging member being offset to clear the end of said second panel;

a second engaging member affixed to the outside surface of said second panel, said second engaging member extending



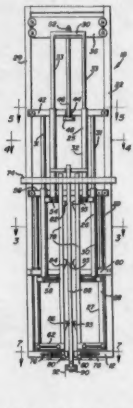
beyond the end of said second panel and having engaging means thereon, said first engaging member being engaged by said second engaging member whereby said first and second panels are joined together.

4,357,994

HYDRAULIC WELL EQUIPMENT HOIST

Ellis C. Hall, Rte. 5, Box 963, Jackson, Miss. 39212

Filed May 7, 1980, Ser. No. 147,378
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—17 **7 Claims**



1. A fluid pressure hoist including an upright frame having a pair of opposite sides, a pair of upstanding guides on each opposite side, at least two pairs of first upper and second lower vertically extendible hydraulic cylinders on each opposite side of said frame, each cylinder including relatively extendible tubular upper and lower telescopingly engaged portions, each opposite side including a first upper brace extending between the upper ends of the upper portions of the upper cylinders and guidingly engaged with said guides, a second brace extending between the upper ends of the lower portions of said upper cylinders as well as the upper ends of the upper portions of the lower cylinders and guidingly engaged with said guides, a third brace extending between the lower ends of the lower portions of the upper cylinders, a fourth brace extending between the upper ends of the lower portions of the lower cylinders, the upper ends of the second lower cylinder upper portions being in fluid communication with the lower ends of the

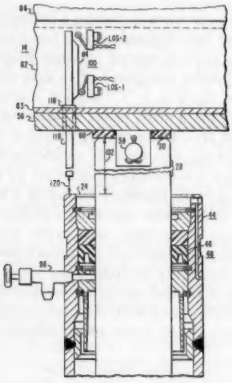
upper cylinder lower portions, a third lowest pair of vertically extendible hydraulic cylinders on each opposite side of said frame, said fourth brace also extending between the upper ends of the upper portions of the third cylinders and guidingly engaged with the corresponding guides, a fifth brace extending between the lower ends of the lowest portions of the second cylinders, the upper ends of the third cylinder upper portions being in fluid communication with the lower ends of the second cylinder lower portions and means operative to selectively communicate said lower portions of said third cylinders with a source of fluid under pressure.

4,357,995

HYDRAULIC SYSTEM INCLUDING OIL REPLENISHMENT FOR MULTI-STAGE HYDRAULIC JACK

George A. Kappenhagen, Stroud Township, Monroe County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,100
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—17 **3 Claims**



1. A hydraulic system, comprising:

a single acting, multi-stage, synchronous hydraulic jack,

said hydraulic jack including an outer cylinder section having first and second ends, an inner plunger section having first and second ends, an intermediate section having first and second ends disposed between said outer cylinder section and said inner plunger section, with said inner and intermediate sections being telescopically mounted, one within the other, and within said outer cylinder section, for endwise extension toward their first ends in response to fluid pressure, first and second fluid seals disposed between the interior and exterior surfaces of the intermediate and outer sections, respectively, and a third fluid seal disposed between the interior and exterior surfaces of the intermediate and inner sections, respectively, said first, second and third fluid seals defining a first fluid chamber disposed in fluid pressure communication with the second end of said intermediate section, and a second fluid chamber disposed in fluid pressure communication with said inner plunger section,

hydraulic fluid in said first and second fluid chambers,

monitoring means providing a predetermined signal when the hydraulic fluid in said second fluid chamber has been reduced by a predetermined amount,

first fluid supply means including a first pump and a reservoir of hydraulic fluid disposed external to said jack for introducing hydraulic fluid into said first fluid chamber when endwise extension of said intermediate and inner plunger sections is desired,

second fluid supply means including a second pump disposed external to said jack, said second pump introducing hydraulic fluid from said reservoir into said second fluid chamber in response to said monitoring means providing its predetermined signal,

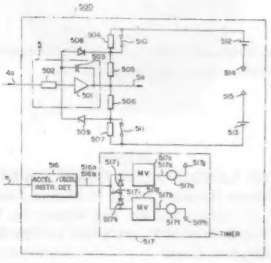
and control means for simultaneously activating both the first and second pumps when the hydraulic jack is to be extended and the monitoring means has provided the predetermined signal.

4,357,996

SPEED CONTROL DEVICE FOR AN ELEVATOR

Toshiaki Ishii, and Takanobu Masaki, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,188
Claims priority, application Japan, Apr. 4, 1979, 54/40802
Int. Cl.³ B66B *1/00*
U.S. Cl. 187—29 R **4 Claims**



1. A speed control device for an elevator in which the speed of a driving electric motor is controlled according to a deceleration instruction signal applied through an integrator comprising:

a detecting circuit for detecting the generation of said deceleration instruction signal and producing an output indicative thereof; and

an integrator output setting circuit for setting an output of said integrator to a predetermined value in response to said output of said detecting circuit when the output of said integrator exceeds the predetermined value, and for passing the output of said integrator therethrough when the output of said integrator is lower than the predetermined value.

4,357,997

ELEVATOR SYSTEM

Alan L. Husson, Hackettstown, N.J., and Michael J. Dynak, Springfield, Ill., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 12, 1981, Ser. No. 234,074
Int. Cl.³ B66B *1/18*
U.S. Cl. 187—29 R **9 Claims**

1. An elevator system for a structure having a plurality of floors, including a main floor, a plurality of floors above the main floor, and a plurality of basement floors located below the main floor, comprising:

a plurality of elevator cars,

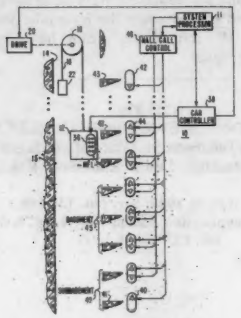
means mounting said elevator cars for movement relative to the structure for serving the floors,

up and down hall call registration means for registering calls for elevator service in the up and down service directions from at least certain of the floors,

zone means for dividing the floors, and service directions therefrom, into a plurality of zones, including up and down service direction zones for the plurality of basement floors,

and selecting means for selecting elevator cars to answer

calls for elevator service from said zones according to a predetermined zone priority order, with the up service



direction basement zone having a higher priority than the down service direction basement zone.

4,357,998

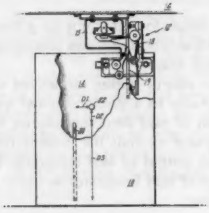
BETWEEN LANDING CAR DOOR SAFETY LOCK

George W. Gibson, Ramsey; Joseph P. Mahon, Cresskill, both of N.J.; John McAulay, Ardsley, and Stanley M. Wolper, Massapequa Park, both of N.Y., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 120,443, Feb. 11, 1980, abandoned. This application Oct. 6, 1981, Ser. No. 315,079

Int. Cl.³ B66B *1/00*

U.S. Cl. 187—49 **9 Claims**



1. An elevator system for transporting passengers between a plurality of floors, said system including a car that includes at least one sliding hall door, characterized by,

an interlock apparatus for controlling the opening of the car door from either the floor or the car, comprising:

a bar-like member attached to the car door, and

a stop member attached to the hall door,

said bar-like member extending vertically for a selected distance from a first distance above the car floor level in the direction in which the car moves between the floors and also extending towards the hall door so that, when the car is adjacent thereto, said bar-like member substantially blocks access to the space between the car and hall door from the door opening that the doors provide,

said stop member being a second distance above the floor level, said second distance being greater than said first distance, and also a third horizontal distance from said member in the space between the doors in the direction the car door opens,

said second distance being such that said stop member is above said bar-like member when the car is within said second distance of the hall floor.

4,357,999

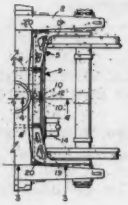
RADIAL TRUCK CENTERING BRAKE ASSEMBLY

Geoffrey W. Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 926,764, Jul. 21, 1978, abandoned. This application Nov. 26, 1980, Ser. No. 210,510

Int. Cl.³ B61F *3/08, 5/44, 13/36*

U.S. Cl. 188—52 **5 Claims**



1. In a railway car truck including a bolster having a pair of centrally located lateral openings and being supported in side frames between vertical spaced columns thereof, a longitudinally spaced wheelset composed of an axle with spaced apart wheels mounted thereon, a "C" shaped steering arm member with two side arms, a cross beam, a downwardly offset connecting post and pivotal connecting means at the extremity of the post, the steering arm member extending from the axle to the bolster where it is pivotally connected by the pivotal connecting means, a brake assembly including a brake beam supported on said side frames, operating cylinder and push rods, the improvement comprising said brake beam having upwardly extending lug means and the cross beam of the steering arm having downwardly extending lug means in interdigitating relationship with said upwardly extending lug means for engaging the steering arm with the brake assembly to restrain lateral movement of the brake beam relative to the steering arm.

4,358,000

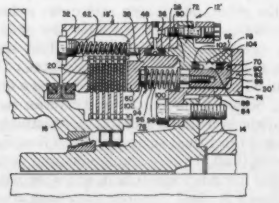
MULTIPLE PISTON FRICTION BRAKE

James C. Cumming, Pleasant Ridge, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 10, 1980, Ser. No. 205,534

Int. Cl.³ F16D *55/40*

U.S. Cl. 188—71.5 **1 Claim**



1. An improved brake for relatively rotating first and second members of the type which includes a housing having a cylindrical portion and a backing plate, said cylindrical portion being secured to said backing plate and said backing plate being secured to said first member; a plurality of brake discs carried by said housing for relative rotation therewith and axial movement therein, a plurality of reaction plates carried by said second member for relative rotation therewith and axial movement thereon, said discs and said plates being intervened in alternating fashion to define a pack; said housing having a

central bore defined by a radially, inwardly extending annular wall of said backing plate and an interior cylindrical surface of said cylindrical portion; a first piston having a tubular portion with a cylindrical outer surface and a radially, outwardly extending wall having an annular surface extending outwardly from said cylindrical outer surface, said first piston being axially, slidably mounted in said bore with said annular wall, said interior cylindrical surface, said exterior cylindrical surface and said annular surface defining a first expandable chamber between said bore and said first piston; a first generally U-shaped expandable seal in said first chamber being seated against said annular wall of said bore and having a pair of lips capable of respectively making sliding, sealing contact with said interior cylindrical surface and said exterior cylindrical surface; a second generally U-shaped expandable seal in said first chamber being seated against said annular surface of said first piston and having a pair of lips capable of respectively making sliding, sealing contact with said interior cylindrical surface and said exterior cylindrical surface; means for selectively introducing hydraulic fluid to and discharging said hydraulic fluid from an intermediate region of said first chamber between said first and said second seals, said hydraulic fluid being sealingly retained therein by said first and said second seals and capable of acting on said first piston for selective movement of said first piston axially relative to said bore; and said tubular portion of said first piston having an end remote from said annular wall of said bore including a radially inwardly extending shoulder which is aligned with said pack to provide compressive braking force thereto when said first piston is moved axially toward said pack by said introduction of said hydraulic fluid to said first chamber, said improvement comprising:

said backing plate having an annular cavity therein open toward an interior of said housing, said cavity being defined by an inwardly facing cylindrical surface and an inwardly extending flange at an end thereof toward said interior of said housing;

a second piston being axially, slidably mounted within said cavity and having an outwardly facing cylindrical surface and an outwardly extending flange thereof at an end thereof remote from said interior of said housing;

said inwardly extending flange, said inwardly facing cylindrical surface, said outwardly facing cylindrical surface, and said outwardly extending flange defining a second expandable chamber between said cavity and said second piston;

axially extending means on said second piston extending into said interior of said housing in alignment with said radially inwardly extending shoulder of said first piston;

means for biasing said second piston toward said pack to cause said axially extending means to contact said radially inwardly extending shoulder which is capable of providing said compressive braking force to said pack;

a third generally U-shaped expandable seal in said second chamber being seated against said inwardly extending flange of said backing plate, a fourth generally U-shaped expandable seal in said second chamber being seated against said outwardly extending flange of said second piston, said third and said fourth seals each having a pair of lips capable of respectively making sliding, sealing contact with said inwardly facing cylindrical surface and said outwardly facing cylindrical surface;

means for the selective introduction of hydraulic fluid to and discharge of hydraulic fluid from said second chamber between said third and said fourth seals, said introduction of said hydraulic fluid being capable of axially moving said second piston away from said pack in opposition to said means for biasing; and

said discharge to said hydraulic fluid allowing said means for biasing to produce said compressive braking force to said pack.

4,358,001

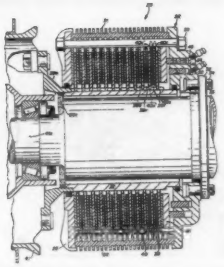
WET DISC FRICTION BRAKE CIRCULATION SYSTEM

Roger A. Iverson, 609 Mullins Dr., Arlington, Tex. 76014

Filed May 21, 1975, Ser. No. 579,420

Int. Cl.[3] F16D *65/84*

U.S. Cl. 188—71.6 **5 Claims**



1. A liquid-cooled disc brake assembly comprising:

(a) a casing having a quantity of liquid disposed therein less than the liquid capacity of said casing, said casing being sealed for retention of said liquid quantity and operable to continuously retain said liquid quantity therein,

(b) a plurality of rotor discs mounted for rotation with respect to said casing about an axis of rotation within said casing,

(c) means for connecting said rotor discs to an external rotating body which is to be selectively braked,

(d) means for mounting said rotor discs for relative movement along the axis of rotation thereof,

(e) a plurality of stator discs disposed within said housing and having essentially flat, exterior disc surfaces, said flat disc surfaces thereof being arranged perpendicular to said axis of rotation,

(f) means for mounting said stator discs in juxtaposed relationship with respect to said rotor discs and for relative movement along the axis of rotation of said rotor discs while not allowing rotation of said stator discs,

(g) means for biasing said rotor and stator discs to a relatively widely spaced apart position whereby no braking action is performed therewith,

(h) heat exchanging means formed on casing portions that extend generally parallel to said axis of rotation, said heat exchanging means comprising a plurality of fins extending inwardly and outwardly from said casing and generally radially toward and away from said axis of rotation,

(i) means for establishing a closed circulatory loop for said cooling liquid during braking so that said cooling liquid is pumped outwardly from adjacent the axis of rotation of said rotor discs toward said casing heat exchanging fins, splashing thereagainst and thereby frothing, and then is allowed to pass inwardly toward said axis of rotation in response to negative pressure adjacent said axis of rotation, said means including means defining interior passageways in at least one of said stator discs for the passage of liquid therethrough inwardly toward said axis of rotation, and

(j) first means for moving said rotors and stators toward each other against the bias of said biasing means to effect braking.

4,358,002

SPREADING DISC BRAKES FOR VEHICLES

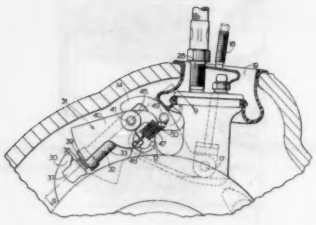
Anthony G. Price, Birmingham, and Robert A. Anderson, Solihull, both of England, assignors to Lucas Industries, Limited, Birmingham, England

Filed Sep. 17, 1979, Ser. No. 76,494

Claims priority, application United Kingdom, Sep. 26, 1978, 38096/78

Int. Cl.[3] F16D *65/56*

U.S. Cl. 188—71.9 6 Claims



1. A self-energising spreading disc brake comprising a housing having opposed spaced radial surfaces, friction discs within said housing provided with friction linings for engagement with said radial surfaces, stationary pilot lugs in said housing, pressure plates located between said friction discs and centered by said pilot lugs, a stop abutment in said housing, a radial projection on each said pressure plate, said pressure plates having adjacent faces provided with co-operating oppositely inclined recesses, and balls or rollers located in said recesses, wherein said brake is initiated by moving said pressure plates in opposite directions into engagement with said friction discs which, in turn, are urged into engagement with said radial surfaces whereafter said pressure plates are carried round angularly with said discs until one is arrested by said stop abutment and the continued angular movement of the other provides a servo-action, a cranked lever having a first end and a second end, a first connection pivotally connecting said cranked lever intermediate its ends to a radial projection on one of said pressure plates, a brake-applying pull-rod, a second connection pivotally connecting said first end of said lever to said pull-rod, and an automatic adjuster through which said second end of said lever acts directly to apply a thrust to the other of said pressure plates whereby movement of said pull-rod in a brake-applying direction urges said pressure plates angularly in opposite directions, said adjuster being operative automatically in response to movement of said lever to determine a relative angular position between said pressure plates at which braking clearances are maintained substantially at constant values, said adjuster comprising a screw-threaded strut acting at opposite ends between said lever and said radial projection on the other pressure plate and of which the effective length is adjustable to compensate for wear of said friction discs, a toothed wheel on said strut, a pawl pivotally mounted directly onto said strut and engageable at one end with said toothed wheel, said toothed wheel being rotatable to alter the effective length of said strut, and a spring adapted to hold said pawl in abutment with said lever during an adjustment stroke in which said pawl can rotate said wheel to increase the effective length of said strut until the force in said spring is overcome by the brake applying load, whereafter said pawl and said lever can move relatively away from each other to preclude further adjustment.

4,358,003

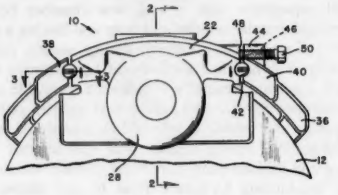
DISC BRAKE HAVING A CALIPER SUPPORTED BY ROLLERS

Donald D. Johannesen, and Joseph R. Williamson, both of South Bend, Ind., assignors to The Bendis Corporation, Southfield, Mich.

Filed Jul. 30, 1980, Ser. No. 173,582

Int. Cl.[3] F16D *55/224*

U.S. Cl. 188—73.43 1 Claim



1. A disc brake comprising:

a rotor having friction faces on opposite sides thereof and rotatable about an axis perpendicular to the plane of said rotor;

a caliper cooperating with a pair of friction elements to urge the pair of friction elements into engagement with the friction faces on the rotor to retard rotation of said rotor;

a non-rotating torque member including a pair of circumferentially-spaced arms which define a recess therebetween, said caliper being received in said recess, said torque member arms having axially-extending grooves in registry with corresponding axially-extending grooves in said caliper, said grooves cooperating to define a pair of axially-extending apertures between said torque member arms and said caliper;

a plurality of roller members disposed within said apertures between said torque member arms and said caliper, said caliper being supported by and spaced from said torque member arms by said roller members, whereby said caliper is free to move axially relative to said torque member by rolling on said roller members but is otherwise substantially prevented from movement in the radial and circumferential directions by said roller members;

said roller members being received between said caliper and the arms of said torque member substantially without radial and circumferential clearance, said caliper and said torque member including cooperating means for forcing said torque member arms apart, and said cooperating means includes an abutment defined on said caliper and a projection on said torque member, said projection defining a threaded bore with threadably receives a member which is engageable with said abutment.

4,358,004

LOAD-TAKING APPARATUS FOR A DISC PACK

Frederick S. Dowell, Coventry, England, and Benedict P. Healy, Wexford, Ireland, assignors to Dunlop Limited, London, England

Filed May 21, 1980, Ser. No. 151,807

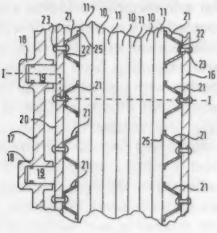
Claims priority, application United Kingdom, May 23, 1979, 7917928

Int. Cl.[3] F16D *55/40*

U.S. Cl. 188—217 5 Claims

1. In a brake assembly having a multi-disc pack and means for applying thrust to the pack and resisting thrust applied thereto, the improvement comprising load-taking means for location at one end of the disc pack to be interposed between the pack and said thrust means said load-taking means comprising an annular support and a plurality of separate hollow, bell-shaped load-taking members each being individually deformable and each having an annular open end and a closed

end, said members extending from one side of the support and in circumferentially spaced relation to each other, each member having a rounded annular peripheral surface at its open end to contact an adjacent disc of the pack, means being provided



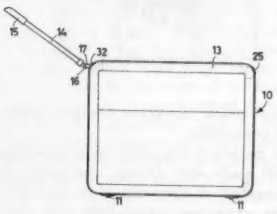
to secure the closed end of each load-taking member to the support in such a way as to permit limited angular deflection of the member relative to one of said support and said adjacent disc.

4,358,005

SUIT-CASE ON WHEELS WITH AN INCORPORATED DRAGGING DEVICE

Giampiero Fontana, Milan, Italy, assignor to Valextra S.p.A., Milan, Italy

Filed Nov. 5, 1980, Ser. No. 204,274
Claims priority, application Italy, Mar. 21, 1980, 21258/80[U]
Int. Cl.³ A45C *5/14*
U.S. Cl. 190—18 A **2 Claims**



1. A suit-case on wheels comprising two half-shells, wheels attached to a side of said suit-case, one half-shell defining an enclosed seat extending the length of a side opposite the wheels, a slider slidably guided in said seat, a grippable handle articulated to said slider and housable within said seat in an extractable manner, said articulation extending beyond said seat when said handle is extracted, a snap-connector attached to said slider, a control knob housed at an end of said seat distant from the end from which said handle is extracted to which said snap-connector is snap-connectable and an extension provided on said control knob arranged to release said snap-connector with said slider.

4,358,006

RIGID SIDE ARM DEVICE FORMING A GUIDING HANDLE FOR SUITCASE

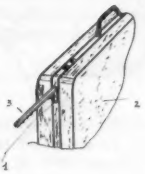
Renato Castelli, Ghent, Belgium, assignor to Samsonite Corporation, Denver, Colo.

Filed Dec. 5, 1980, Ser. No. 213,389
Claims priority, application Belgium, Dec. 28, 1979, 0/198799
Int. Cl.³ A45C *13/28, 5/14*
U.S. Cl. 190—18 A **9 Claims**

1. A handle assembly for a suitcase of rigid structure having a bottom, top, sides and ends and rolling elements at at least one end of the bottom, said handle assembly comprising:

a fixed vertical member of outwardly opening U-shaped channel cross section secured to one end of the suitcase near the top thereof,

a handle comprising a member of U-shaped channel cross section pivotally connected at an inner end to an upper end portion of said fixed member for pivotal movement between a closed position in which it is nested with said fixed member and an open position in which it extends approximately perpendicularly from said fixed member,



a brace member having an inner end pivotally connected to said fixed vertical member at a point below the pivotal connection of said handle member, and an enlarged outer end slidable in a channel provided in said channel shaped cross-section of said handle member,

stop means in said channel for limiting the sliding movement therein of said outer end of said brace member, and

a double-curved spring strip secured to said fixed member and engaging said brace member to exert a force thereon to retain said handle member in its closed position when in said closed position and to retain said handle member in its open position when moved to said open position.

4,358,007

SUPPORTING AND GUIDING STAND ARRANGEMENT TO BE USED IN A BOW-TYPE CONTINUOUS CASTING PLANT

Werner Scheurecker, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Feb. 25, 1980, Ser. No. 124,422
Claims priority, application Austria, Mar. 7, 1979, 1726/79
Int. Cl.³ B22D *11/14*
U.S. Cl. 193—35 R **4 Claims**

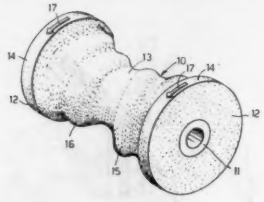
1. In a supporting and guiding stand arrangement to be used in a bow-type continuous casting plant and of the type including an inner guideway and an outer guideway arranged opposite each other, rollers arranged on said inner guideway and said outer guideway at a distance from one another, and supporting segments for accommodating said rollers, said supporting segments being removable from the arc outer guideway side and being exchangeable, the improvement comprising accommodating positions provided on the outer guideway side of the arc at different heights, and rails for directly supporting and displacing said supporting segments to said accommodat-

ing positions without an additional carrying device for supporting the segments during displacement.

4,358,008
KEEL ROLLER

Raymond G. Hillier, 159 Boniface St., Coopers Plains, Brisbane, Queensland, Australia (4108)

Filed Oct. 17, 1980, Ser. No. 197,941
Int. Cl.³ B65G *13/00*
U.S. Cl. 193—37 **3 Claims**

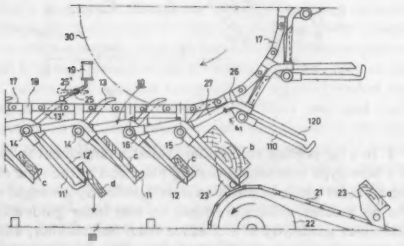


1. A keel roller for a boat trailer including an elongate body capable of being rotatably mounted on a boat trailer, said body having a centrally located peripheral groove and opposed laterally extending side portions located adjacent said groove, said side portions comprising oppositely handed helical threads thereby providing a plurality of hills and valleys, the height of each hill decreasing progressively toward the centrally located groove so that the periphery of each side portion converges or tapers inwardly toward the centrally located groove which is of less diameter than the remainder of the body, the successive vertices of each hill of each respective side portion and the lowermost point of the centrally located groove being substantially collinear, each hill being substantially arcuate and each valley being concave, whereby when a boat is drawn onto the trailer with the boat keel on the roller, the tapered oppositely threaded side portions of the elongate body produce a gravitational sliding effect whereby the keel, if displaced from the centrally located groove, readily attains its original position in the peripheral groove to thereby reduce fouling of the keel to a minimum when the boat is drawn onto the trailer.

4,358,009
METHOD AND APPARATUS FOR SORTING TIMBER PIECES

Alpo Rysti, Friisiläntie 36, 02240 Espoo 24, Finland

Filed Nov. 7, 1980, Ser. No. 204,898
Claims priority, application Finland, Nov. 16, 1979, 793606
Int. Cl.³ B65G *47/50, 17/34;* B07C *5/36*
U.S. Cl. 198—365 **14 Claims**

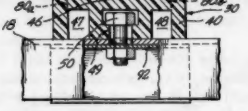


1. Apparatus for sorting timber pieces comprising: endless conveyer means; a plurality of elongate support members mounted on said conveyer means extending transversely to the direction of travel of said conveyer means, substantially equally spaced from one another in the direction of travel, and freely rotatable about their respective longitudinal axes; at least two hook arms fixed to each of said support members for rotation therewith, each hook arm having a stop portion at a free end thereof for supporting a timber piece; at least one angular arm member mounted on each of said support members, each angular arm member including a stem portion having a free end mounted for free rotation on a respective support member, an angular portion extending from said stem portion, and a straight arm extending from said angular portion into operative relationship with said hook arms fixed to a succeeding support member in the direction of travel of said conveyer means, said angular arm members being in supported engagement in the region of said angular portion thereof with said succeeding support members; and means for rotating each of said support members upon the same reaching a predetermined location along its path of travel to thereby rotate said hook arms fixed thereto relative to said straight arms.

4,358,010
CONVEYOR

Creighton J. Besch, 2330 - 43rd #405, Seattle, Wash. 98112

Continuation of Ser. No. 116,797, Jan. 30, 1980, abandoned. This application Aug. 12, 1981, Ser. No. 292,171
Int. Cl.³ B65G *17/06, 21/22*
U.S. Cl. 198—838 **9 Claims**



1. An endless article conveyor for transporting articles placed thereon comprising:

an elongated conveyor track having an upwardly opening longitudinal guide slot therein, said guide slot having upright longitudinal sidewalls with mutually opposed, transversely extending longitudinal side slots recessed therein, said guide slot having a bottom with a longitudinal running rail upstanding from said bottom and centered between said sidewalls and having a width dimension narrower than the spacing between said sidewalls;

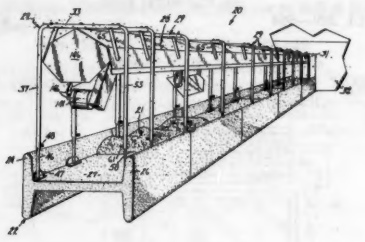
an endless article support conveyor chain engaged and longitudinally movable in said guide slot, said chain comprising a series of links successively interconnected, links at regular intervals in said series having opposed substantially flat stabilizer tabs extending transversely into and slidably engaged in the respective side slots, links at regular intervals in said series having transversely spaced upright sideplates downwardly overlapping respectively opposite sides of said rail, links at regular intervals in said series carrying and being supported by transversely extending chain rollers disposed in longitudinal rolling engagement with the top of said rail, said chain projecting upwardly above the track to engage load articles for moving the same along said track, wherein the track comprises a unitary elongated extrusion of polymeric synthetic material having top and opposite side faces, said guide slot comprising an inverted T-shaped slot formed opening upwardly on said top face with an integral rib upstanding from the bottom of the guide slot to form said rail.

4,358,011

MATERIAL CONVEYING APPARATUS

Floyd E. Buschbom, Long Lake, and Glen D. Hansen, Maple Plain, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Division of Ser. No. 115,608, Jan. 28, 1980, Pat. No. 4,320,825.
This application Dec. 11, 1980, Ser. No. 215,456
Int. Cl.[3] B65G *21/08*
U.S. Cl. 198—861 11 Claims



1. An apparatus for conveying material comprising: an elongated support having an elongated top wall, a plurality of elongated wood means secured to the top wall of the support and extended along the length of the top wall, said wood means comprising laterally spaced wood members, a plurality of longitudinally spaced stand means for holding the support in a selected location, each of said stand means having arm means connected to the support and downwardly directed leg means, said arm means and leg means having cooperating means mounting the leg means on the arm means and allowing lateral adjustment of the leg means relative to the support, an endless belt having a top run supported on the wood members, idler pulley means engageable with one end of the belt, drive pulley means engageable with the other end of the belt, means to rotate the drive pulley means thereby moving the belt relative to the support, cover support means attached to the stand means, ridge means extended between and connected to adjacent cover support means, said ridge means being located above and extended in the direction of the length of the support, said ridge means having longitudinal lip means providing a downwardly open longitudinal groove, cover means extended between adjacent stand means, said cover means having a longitudinal flange means located in said longitudinal groove and cooperating with said lip means to allow the cover means to be moved from a first position in engagement with the cover support means to enclose the support and belt and to a second position away from the support and belt to provide access thereto, and means for connecting the cover means to the support to hold the cover means in said first position.

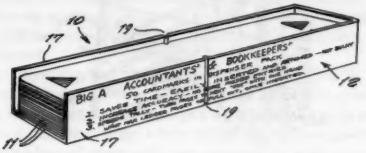
4,358,012

ACCOUNTANTS AND BOOKKEEPERS CARDMARKS IN DISPENSER PACK

Charlotte Marsala, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007

Filed Aug. 20, 1980, Ser. No. 179,676
Int. Cl.[3] B65D *83/08, 85/62*
U.S. Cl. 206—39 1 Claim

1. An article of manufacture for accountants, and bookkeepers, comprising in combination, an assembly of a plurality of cardmarks and a dispensing container of conforming shape for containing said cardmarks for dispensing, each said cardmark being elongated and flat having opposite side edges with notches engaged by opposite sides and inward protrusions on said opposite sides of said container said container comprising a box with an open top, including a bottom wall, said opposite side walls, an end wall and an open end wherein a triangular opening is provided near each opposite end of said cardmark wherein the apex of each triangular opening is along the cardmark longitudinal axis wherein said container includes means for causing outward flexing of said protrusions in response to longitudinal movement of the cardmarks to facilitate insertion



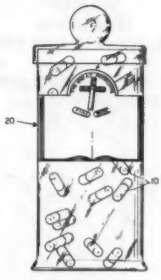
and removal of the cardmarks, wherein said means comprises slits along each side of said bottom wall adjacent said protrusions whereby said protrusions are not attached to said bottom wall.

4,358,013

MEDITATION SUPPORTING DEVICE

David P. Shebley, 1842 Woodsdale Ct., Concord, Calif. 94521

Filed Jul. 28, 1980, Ser. No. 172,981
Int. Cl.[3] B65D *25/54, 85/00*
U.S. Cl. 206—45.34 6 Claims



1. A meditation support device comprising a plurality of capsule-like containers, individual scrolls containing indicia in the form of a variety of inspirational messages being disposed within the capsule-like containers, the plurality of capsules including the scrolls with the variety of inspirational messages being disposed within a relatively large display container in order to permit selective removal of the capsules and extraction of the scrolls therefrom for displaying the individual inspirational message, the capsule-like containers and the display container being of configurations associated with medicine and/or physical medications.

4,358,014

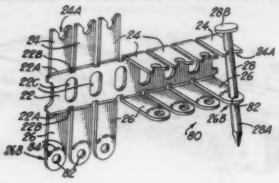
FASTENER STRIP

Frank R. Potucek, Des Plaines, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.

Continuation of Ser. No. 845,076, Oct. 25, 1977, abandoned, which is a division of Ser. No. 614,759, Sep. 18, 1975, which is a division of Ser. No. 387,443, Aug. 10, 1973, Pat. No. 3,915,367.
This application Feb. 23, 1979, Ser. No. 14,425
Int. Cl.[3] B65D *85/24*
U.S. Cl. 206—347 22 Claims

1. An assemblage of fasteners comprising
an elongated length of flexible web material,
a pair of rows of tab portions projecting from the opposite edges of the web substantially transverse thereto, the tab portions in different rows being of different lengths and having fastener receiving means disposed at the outer free ends of the tab portions,

and a plurality of headed fasteners each having a head portion and a shank portion, each fastener having its shank



portion disposed in the fastener receiving means on one tab portion in each of the two rows.

4,358,015

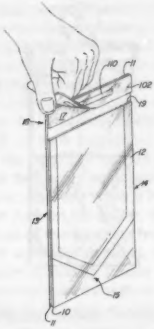
PRESSURE SENSITIVE CLOSURE POUCH WITH INSERTABLE STERILIZATION INDICATOR

Arthur Hirsch, Elizabeth, N.J., assignor to Arvey Corporation, Chicago, Ill.

Continuation of Ser. No. 9,432, May 2, 1979, abandoned. This application Sep. 19, 1980, Ser. No. 188,931

Int. Cl.³ B65D *79/00*

U.S. Cl. 206—439 **2 Claims**



1. In a sterilization pouch comprising first and second opposing webs which are sealed together except for a region defining an open mouth and comprising sealing means for closing the mouth of said pouch and including a strip of adhesive on at least one of said webs adjacent to said open mouth, the improvement comprising:

a peelable release strip superposed upon said adhesive strip, said release strip having an outer and an inner surface with said inner surface arranged in face-to-face contact with said adhesive strip and adhering thereto for masking said adhesive strip from external contact before said pouch is closed and sealed, said release strip including an indicator substance for indicating exposure to a predetermined sterilization condition, said indicator substance being present at least at said release strip inner surface and masked by an overlying thickness of said release strip and by said release strip outer surface, said indicator substance having an initial appearance color signifying that the indicator substance has not been subjected to said predetermined sterilization condition and said indicator substance further being adapted to change to a final appearance color upon exposure to said predetermined sterilization condition for indicating such exposure, said release strip being easily peelable from said adhesive strip whereby, when said release strip is removed from said adhesive strip and placed in said pouch and when said pouch is sealed and sterilized, said indicator substance changes from said initial appearance color to said final appearance color to indicate the attainment of said predetermined sterilization condition within said pouch.

4,358,016

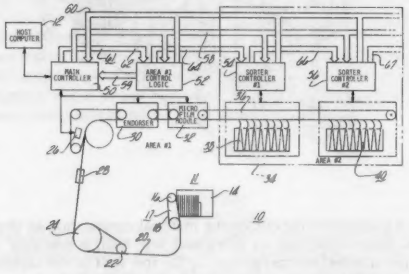
DOCUMENT SORTER APPARATUS

James M. Richardson, Westland, Mich., and James Rubino, Camarillo, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 21, 1979, Ser. No. 13,615

Int. Cl.³ B07C *5/00*

U.S. Cl. 209—564 **9 Claims**



1. A document sorter apparatus for sorting documents having data characters recorded thereon, said document sorter apparatus comprising:

a plurality of document storage locations in which selective ones of said documents are stored;

a mechanism for transporting said documents into said document storage locations;

means for reading said data characters on said documents;

first controller means, responsive to said reading means, for generating a destination code and a tracking code for each document, said destination code signaling one of said document storage locations for storing said presently read document and said tracking code identifying the location of said document relative to said document storage locations;

means, associated with each of said document storage locations, for sorting said document into said selected one of said document storage locations;

means, associated with each of said document storage locations, for detecting the presence of a document, said document detection means identifying to said first controller the location of said document; and

sorter controller means, responsive to said destination code from said first controller means, for controlling the operation of said sorting means to direct said document into said selected one of said document storage locations, said sorter controller means controlling the operation of a predetermined number of said sorting means;

said sorter controller means including:

first memory mean for storing program instructions in a plurality of addressable locations;

second memory means for storing data words in a plurality of addressable locations;

means for addressing said first memory means and outputting said program instructions;

means for decoding said program instruction words outputted from said first memory means, said decoding means including third memory means for storing control words useful in controlling the operation of said sorter controller means, said decoding means being operative to generate addresses for said second memory means for the transfer of data words to and from said second memory means; and

arithmetic logic means for performing arithmetic and logic operations on said data words;

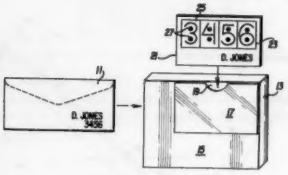
said decoding means being responsive to said program instructions from said first memory means for addressing said third memory means and for generating, in response thereto, electrical control commands for controlling the operation of said arithmetic logic means and said addressing means.

4,358,017

MAIL DIRECTION SYSTEM

Rolf B. Erikson, Highland Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Oct. 21, 1980, Ser. No. 199,180
Int. Cl.³ B07C 5/00
U.S. Cl. 209—584 **11 Claims**



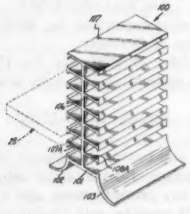
1. A mail direction system comprising:
a director card having indicia-receiving means thereon for receiving machine readable indicia identifying a given addressee;
carrier means for holding said director card and associated mail for said addressee;
character recognition means for reading said machine readable indicia and generating indicia signals representing said indicia;
means including look-up table means for receiving said indicia signals and generating mail stop signals corresponding to said indicia signals; and,
directing means operative in response to said mail stop signals for directing said carrier and the mail therein to the mail stop associated with said addressee.

4,358,018

ARTICLE STORAGE APPARATUS

Ingo E. Wolfe, 2901-80th Ave. North, Brooklyn Park, Minn. 55444

Filed Sep. 2, 1980, Ser. No. 182,959
Int. Cl.³ A47F 7/00
U.S. Cl. 211—41 **8 Claims**



1. An apparatus for storing one or more articles, as tape cassettes, having a housing with opposite sides and enlarged sections on said sides, said enlarged sections having top edges and end edges, comprising: a base including a center wall, a plurality of elongated ribs secured to said center wall and projected outwardly from opposite sides of said center wall, the adjacent ribs on each side of the center all extending parallel to each other and being laterally spaced providing grooves to accommodate tape cassette housings and enlarged sections thereof, lip means on said ribs engageable with said top edges of the enlarged section of the tape cassette to retain the tape cassettes in said grooves, stop means on end portions of the ribs engageable with one edge of said enlarged sections to limit longitudinal movement of the tape cassettes in one direction in said grooves, a support attached to said center wall, and leg means attached to said support to locate the apparatus on a fixed support.

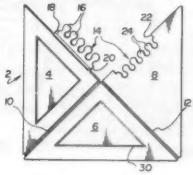
5. An apparatus for storing one or more articles, as tape cassettes, having a housing with opposite sides and enlarged sections on said sides, said enlarged sections having top edges and end edges, comprising: a base including a cylindrical member, a plurality of elongated ribs attached to and projected outwardly from said cylindrical member, adjacent ribs extended parallel to each other and being laterally spaced from each other providing grooves to accommodate tape cassette housings and enlarged sections thereof, adjacent ribs being circumferentially spaced from each other providing said grooves, lip means on said ribs engageable with said top edges of the enlarged sections of the tape cassettes to retain the tape cassettes in said grooves, a support engageable with said cylindrical member to locate the cylindrical member relative to a fixed member, a cover engageable with the cylindrical member, and means holding the support and cover in engagement with the cylindrical member.

4,358,019

BOOK END

Linton S. Garner, 1902-1450 W. Georgia St., Vancouver, B.C., V6G 2T8, Canada

Filed May 6, 1980, Ser. No. 147,128
Int. Cl.³ A47B 63/00
U.S. Cl. 211—42 **5 Claims**



1. A one piece blank before folding having, a first side, a second side equal in length to said first side and extending normal thereto from an end thereof, a third side equal in length to said first and second sides and extending from the remaining end of said first side in parallel relationship to said second side, a fourth side extending from the remaining end of said second side toward the juncture of said first and third sides at an angle of 45°, and a fifth side extending from the remaining end of said third side toward the juncture of said first and second sides at an angle of 45°, said fourth and fifth sides terminating at a juncture therebetween and forming a 90° angle at said juncture.

4,358,020

APPARATUS FOR ALIGNING TROLLEYS

Duane L. Thiele, Schofield, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 31, 1980, Ser. No. 221,835
Int. Cl.³ B66C 5/02
U.S. Cl. 212—147 **18 Claims**

1. In a straddle carrier having: an inverted U-shaped frame defining a container carrying bay between first and second legs; first and second longitudinally spaced transversely extending beams supported by said frame; a first and second trolley carried by said first and second beams respectively, each trolley being free to move transversely relative to said bay along said beams, each of said beams defining a substan-

tially vertical surface parallel to the path traversed by said trolleys on said beams; and a spreader supported by said trolleys and used to connect containers thereto, apparatus for signalling that said spreader is skewed beyond a first pre-selected angle, comprising:

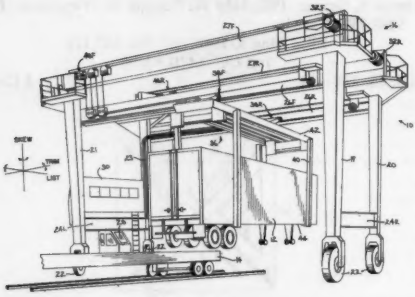
(a) first and second trolley followers on said first and second trolleys respectively, each of said trolley followers including:

a link pivotally connected to the trolley at a point intermediate the ends of said link, said link freely pivoting about an axis generally perpendicular to the plane of travel of the trolley on its beam;

a reference wheel, the axle of which is journaled to one end of said link and is parallel to the pivot axis of said link; and

biasing means, joining the opposite end of said link and a fixed point on the trolley, for holding the periphery of said reference wheel against said vertical surface on said beam, the axis of said reference wheel remaining at a substantially fixed distance from said vertical surface while said trolley is repositioned along said beam.

said first and second trolley followers when positioned with the axes of said reference wheels lying in a vertical plane substantially perpendicular to said vertical surfaces then defining the "zero skew positions" of said trolleys and the spreader carried by said trolleys, the angular skew of said trolleys being defined as the acute angle between the vertical plane established by the axes



of said reference wheels and the plane established by the axes of said reference wheels with said trolleys in a zero skew position;

(b) a sheave free to rotate about the axis of said reference wheel on the second trolley follower;

(c) flexible inextensible means, connected at one end to the first trolley follower and connected at the other end to a constant tension spring which is connected at its opposite end to the opposite end of the link on the second trolley follower, said inextensible means being reeved over said sheave on the second trolley follower,

the position of said other end of said inextensible means relative to said opposite end of said link on said second trolley follower when said trolleys are in a zero skew position defines the "reference position" of said one end of said inextensible means, relative movement of said trolleys along said beams from a zero skew position to a skewed position driving said other end of said inextensible means away from said reference position, said trolleys being aligned relative to one another by repositioning the trolleys until said other end of said inextensible means returns to said reference position; and

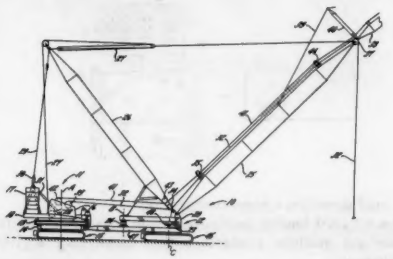
(d) trip means, carried by the other end of said inextensible means, for tripping a switch carried by said second trolley in response to said other end of said inextensible means being driven from said reference position to a first position, said trolleys when displaced from said zero skew position to the extent of skewing said spreader to a first pre-selected angle defining the "first position" of said other end of said inextensible means relative to said opposite end of said link on said second trolley follower, whereby the tripping of said switch signals that said spreader is skewed to an angle at least equal to said first pre-selected angle.

4,358,021

SEPARATED RING SEGMENT DUAL PIVOT LIFT CRANE

Percy R. Helm, and James G. Morrow, Sr., both of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Mar. 7, 1980, Ser. No. 128,139
Int. Cl.³ B66C *23/74*
U.S. Cl. 212—195 **5 Claims**



1. A lift crane with separated front and rear ring segments and dual pivots for a forwardly extending boom and a rearwardly disposed counterweight comprising, in combination, a forwardly inclined boom and a rearwardly inclined mast pivotally mounted on a boom carrier roller mounted on a front ring segment supported by a front transporter assembly, said carrier being pivoted about a first vertical axis and said transporter assembly being pivoted about a second vertical axis, a counterweight roller mounted on a rear ring segment supported by a rear transporter assembly, said counterweight being pivoted about a third vertical axis means interconnecting said front and reartransporter said first vertical axis, and means interconnecting the tip of the boom, the tip of the mast and the counterweight including a swivel connection between the mast tip and counterweight to permit limited swinging movement of said mast and boom about said first vertical axis and swinging movement of said counterweight about said third vertical axis.

4,358,022

PACKAGING UNIT

Albert Geiger, Breitenauerstrasse 1a, 8100 Garmisch-Partenkirchen, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,275
Claims priority, application Fed. Rep. of Germany, May 29, 1979, 2921747
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—224 **20 Claims**

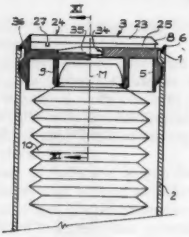
1. A packaging unit having a container with a filling opening, the exterior surface of the container adjacent to said opening being free of any protuberances, and a removal-resistant closure closing said opening, said closure comprising:

means cooperating with said opening to retain said closure on the container;

a substantially smooth, sloped exterior surface on the peripheral portion adjacent to the periphery of said opening, the maximum dimensional extent of said closure being substantially equal to the exterior dimensional extent of the container at said opening, the dimensional extent and smooth, sloped exterior surface cooperating to avoid any surface which is useful in removing said closure;

a slidable closure removal assisting member on said closure adapted to be displaced from a first position wherein said

member is positioned within the peripheral confines of said closure, to a second position wherein a portion of said member extends beyond the periphery of said closure to provide a surface against which a force is applied to remove said closure;



stop means on said closure; and

coacting means on said slidable member cooperating with said stop means to prevent removal of said member from said closure.

4,358,023

CAPPING ASSEMBLY FOR USE IN FUEL STORAGE TANK FOR VEHICLES

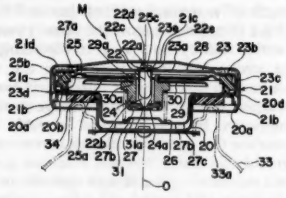
Masakazu Fukuta, Tsushima, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed May 28, 1980, Ser. No. 154,081

Claims priority, application Japan, Jun. 1, 1979, 54-75004[U]

Int. Cl.³ B65D *51/16*

U.S. Cl. 220—209 **10 Claims**



1. A capping assembly for use with a fuel tank, said assembly comprising:

a casing having an open end;

a cover attached to said casing and covering said open end and having a cavity, said cavity being founded by inner peripheral portions of said casing and said cover;

a diaphragm fixedly positioned within said cavity and having a central opening;

said diaphragm being movable in response to a pressure differential between the ambient pressure and the pressure within a fuel tank;

two chambers, each of said chambers being respectively defined by opposite sides of said diaphragm and the periphery of said cavity;

a first air passage means for communicating one of said chambers with the ambient;

a second air passage means for communicating the other of said chambers with the inside of a fuel tank;

a valve means operatively associated with said diaphragm for selectively communicating said two chambers through said diaphragm opening in response to a movement of said diaphragm whereby the pressure within a fuel tank is substantially equalized with the ambient pressure;

said valve means including:

a hollow, substantially cylindrical shaped valve seat holding member axially aligned with said diaphragm central opening and having first and second opposite end portions, the first end portion being attached to said diaphragm;

an elongated needle valve member positioned within said hollow valve seat holding member and having one end extending slightly out of said valve seat holding member, support means adjacent to said cover, said valve member being attached to said support means, said valve member being axially aligned with the diaphragm central opening and having a cross-sectional shape for substantially filling the cross-sectional area of the hollow valve seat holding member, the other end of said valve member being completely enclosed within said cavity and being conically shaped, said valve seat holding member being slightly spaced from said valve member for being movable relative to said valve member in the direction of the axis of the valve member;

a substantially annular valve seat attached to the second end portion of said cylindrically shaped valve seat holding member and having a valve opening therethrough axially aligned with said conical free end and being positioned and dimensioned for, when said valve seat is in one position, seating with said conical free end for closing said bore; and

a spring means operatively associated with said valve seat holding member for biasing said valve seat toward said valve and into said one position and for allowing said valve seat to move away from and thereby unseat with said valve in response to a movement of said diaphragm.

4,358,024

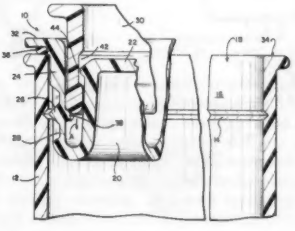
CONTAINER CLOSURE

J. Larry Underwood, c/o Underwood Mold Co., Inc., 104 Dixie Dr., Woodstock, Ga. 30188

Filed Jul. 10, 1981, Ser. No. 281,970

Int. Cl.³ B65D *53/00*

U.S. Cl. 220—234 **10 Claims**



1. A closure for a container comprising:

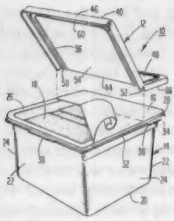
a lid having a central disk, an upstanding wall at the periphery of the disk for contacting an interior surface of a container, a plurality of radial projections on an outside surface of the outstanding wall, a like plurality of regions of the upstanding wall, one each surrounding each radial projection, the regions being substantially thinner than the remaining portions of the upstanding wall for imparting radial flexibility between the plurality of projections and the remaining portions of the upstanding wall, and actuating means disposed radially inside the upstanding wall and axially displaceable with respect to the upstanding wall for radially displacing said plurality of projections.

4,358,025

PACKAGE WITH FLEXIBLE SEGMENTED FIN SEALING

Kenard E. Urion, Woodbury, N.J., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Mar. 13, 1981, Ser. No. 243,589
Int. Cl.[3] B65D 51/22
U.S. Cl. 220—258 10 Claims



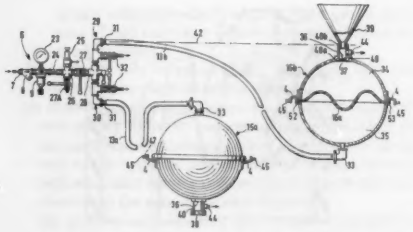
1. An improved package or dispenser of the type having a container with an open end portion, a closure for covering the opening of the container and means for retaining the closure over the container body, wherein the improvement comprises flexible, segmented sealing fins extending between the closure and the container body, said fins sealing the package when the closure is retained over the container opening.

4,358,026

APPARATUS AND PROCESS FOR DISPENSING LIQUID PREPARATIONS

Esa K. Mäkinen, Espoo, Finland, assignor to ITP Associates AG, Zug, Switzerland

Continuation of Ser. No. 903,910, May 8, 1978, abandoned. This application Sep. 24, 1980, Ser. No. 190,441
Claims priority, application Finland, May 10, 1977, 770125
Int. Cl.[3] B67D 5/06
U.S. Cl. 222—1 4 Claims



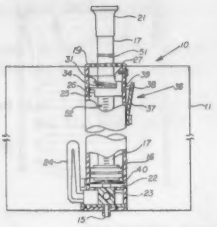
4. A process for dispensing a liquid preparation comprising gravity feeding liquid to be dispensed into one compartment of a container divided into two compartments by a flexible diaphragm in which the other compartment is filled with a liquid under sufficient hydrostatic head to have displaced said diaphragm into said one compartment and to maintain a balance in the pressure in the two compartments such that said diaphragm is displaced into said other compartment only so fast as liquid to be dispensed is gravity fed into said one compartment until said one compartment is adequately filled with liquid to be dispensed; and thereafter increasing the pressure in said other compartment sufficiently to force liquid to be dispensed from said one compartment.

4,358,027

LIQUID DISPENSER APPARATUS

Edward J. Poitras, Vero Beach, Fla. 32960

Continuation of Ser. No. 64,803, Aug. 8, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,140
Int. Cl.[3] G01F 11/02
U.S. Cl. 222—43 6 Claims



1. Liquid dispenser apparatus comprising:

container means for a liquid to be dispensed;

pump means for withdrawing metered quantities of liquid from said container means, said pump means comprising a cylinder defining inlet and outlet ports and a piston being manually reciprocable between an intake stroke during which liquid is drawn through said inlet port and a discharge stroke during which substantially the entire liquid content of said cylinder is expelled through said outlet port, said pump means further comprising a pump rod fixed to said piston and extending out of said cylinder so as to be manually accessible and operable to produce said intake and discharge strokes;

manual selector limit means for adjustably fixing the maximum length of said discharge stroke; said limit means comprising a stop slidably mounted on said pump rod and located within said cylinder so as to adjustably limit said discharge stroke and thereby establish the volume of liquid drawn into said cylinder during said intake stroke and discharged during said fixed discharge stroke, fastener means supported by said stop and movable between a locked position that prevents relative movement between said stop and said pump rod and a release position that allows said movement, an activator operable to move said fastener between said locked and release positions, a bias means biasing said fastener means toward said locked position, and an abutment surface on said cylinder for engaging said stop to limit said discharge stroke and wherein said activator means is manually operable to overcome said bias and force said fastener means into said release position; and

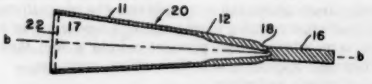
manual valve means for selectively opening and closing said inlet and outlet ports.

4,358,028

SINGLE DOSE DISPOSABLE CONTAINER

Marcelo Chiquiar-Arias, Mexico City, Mexico, assignor to Mercantile & Technical Promotions Inc., New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,132
Int. Cl.[3] B65D 47/10
U.S. Cl. 222—107 5 Claims



1. An improved unit-dose disposable container of molded

plastic to be manually opened, without the need for accessories, for dispensing liquid medicines and the like, said container being molded as an integral piece so that its several parts disposed along a central longitudinal axis of the container are of sequentially narrower widths, said sequential parts consisting of:

a wide flexible body to be compressed for expelling the contents of the container;

a narrow, more rigid nozzle to be held with the thumb and finger on opening the container, and an even narrower, solid tip portion of substantially constant cross-section;

at least said wide flexible body and said nozzle portion defining therein a hollow cavity for receiving the liquid for dispensing from the container;

said tip portion being of sufficient length for holding with the thumb and finger and having sufficient cross-section area and having an outer gripping contour of a polygonal cross-section to form three or more graspable flat sides so that, while gripping the tip, oppositely directed motion between the thumb and finger along a path transverse to the longitudinal axis of the container imparts a rotating movement to the tip about said longitudinal axis sufficient to break off said tip at a point adjacent the joining of the tip and the nozzle whereby to open the container and to permit expelling its contents through a resulting dispensing orifice communicating with the hollow cavity, said rigid nozzle having sufficient wall thickness that when gripped the container is maintained in a secure and steady condition during the breaking-off of the tip portion.

4,358,029

DILUTING AND POURING APPARATUS FOR A LIQUID FOOD

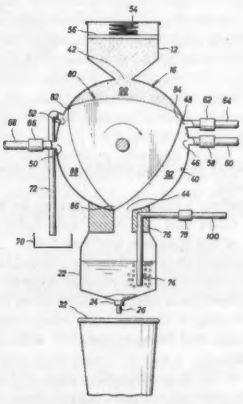
Kenju Yomoda, Honjo, Japan, assignor to Lotte Company Limited, Tokyo, Japan

Filed Aug. 4, 1980, Ser. No. 175,042

Claims priority, application Japan, Aug. 7, 1979, 54-99880; Apr. 25, 1980, 55-54362

Int. Cl.³ B67D 5/60

U.S. Cl. 222—133 **4 Claims**



1. A diluting and pouring apparatus for liquid food, comprising a casing having a circular inner peripheral face and being formed in said inner peripheral face with a raw liquid food inlet port, a diluent inlet port, a pouring port, a washing medium inlet port and a washing medium outlet port, a rotor rotatably supported within said casing, said rotor being substantially triangular in shape providing three equiangularly spaced apexes, said apexes being in slidable contact with said circular inner peripheral face so that a first, second and third chambers having the same volume are formed within said casing and said chambers are moved along said inner peripheral face with a rotation of said rotor and means for driving said rotor, said chambers having such relation to said raw liquid food inlet port, said diluent inlet port, said pouring port, said washing medium inlet port and said washing medium outlet port so that, when said first chamber is in a washing state and communicates with said washing medium inlet and outlet ports, said second chamber is a filling state and communicates with said raw liquid food inlet port and said third chamber is in a diluting and pouring state and communicates with said diluent inlet port and said pouring port, whereby said first chamber is washed by a washing medimum supplied through said washing medium inlet port and discharged from said washing medium outlet port, said second chamber is filled with the raw liquid food supplied through said raw liquid food inlet port and said third chamber is supplied through said diluent inlet port with a diluent so that the raw liquid food therein is diluted with the diluent and then diluted liquid food is poured through said pouring port, said states of said chambers being segmentially exchanged with the rotation of said rotor.

4,358,030

DEVICE FOR THE MELTING AND MEASURED DISCHARGE OF THERMOPLASTIC ADHESIVE

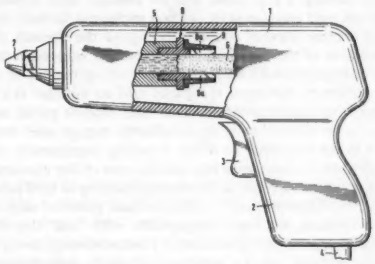
Erich Leibhard, Munich, and Franz Popp, Puchheim, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Apr. 25, 1980, Ser. No. 143,847

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917474

Int. Cl.³ B67D 5/62

U.S. Cl. 222—146 H **18 Claims**

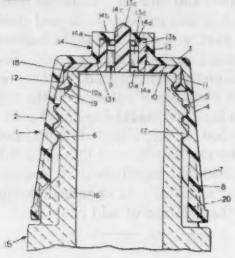


1. Device for the melting and measured discharge of a thermoplastic adhesive comprising walls forming a melting chamber having an inlet end through which a body of solid thermoplastic adhesive of variable cross sectional size and shape is introduced into said melting chamber and an outlet end spaced from said inlet end for discharging melted thermoplastic material from said melting chamber, an axially extending sealing sleeve positioned at said inlet end of said melting chamber so that the solid thermoplastic material can be passed through said sealing sleeve and into said inlet end of said melting chamber, said sealing sleeve arranged to be in surface contact with the outside surface of the body of solid thermoplastic adhesive for preventing melted adhesive from flowing rearwardly through said sleeve out of said melting chamber, wherein the improvement comprises that said sealing sleeve is formed of a temperature-resistant poor heat-conductive material having good sliding properties, said sealing sleeve having a first end located at the inlet end of said melting chamber and a second end spaced axially outwardly from said melting chamber in the direction away from said melting chamber, and said sealing sleeve having slots dividing said second end of said sealing sleeve into independently movable resilient lugs, said slots extending in the axial direction of said sealing sleeve through said second end toward said first end with said slots spaced apart around the circumference of said sealing sleeve.

4,358,031
SAFETY CLOSURE AND CONTAINER WITH DISPENSING SPOUT

Richard D. Lohrman, Mundelein, Ill., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 26, 1980, Ser. No. 181,532
Int. Cl.³ B65D *47/28, 55/02*
U.S. Cl. 222—153 **1 Claim**



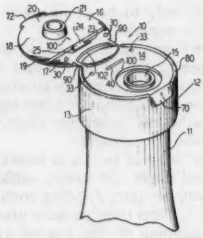
1. An improved child-resistant safety closure with a dispensing spout adapted for threadable attachement on a container having a generally cylindrical, hollow dispensing end including an externally threaded neck portion, an annular rim defining a dispensing opening, an annular groove adjacent said dispensing opening, and locking means on said container engageable by at least the last 360° rotation of the closure relative to the container, said closure comprising: an outer closure element having a top panel and an annular skirt depending therefrom; said annular skirt portion including threads on the interior surface thereof adapted to engage the threads of the neck portion of the container, and manually releasable detent means engageable with said container locking means; an inner closure element having a top panel and an annular skirt depending from the periphery of said inner closure panel; means on said inner closure skirt to detachably engage said annular groove in the container to effect a sealing engagement of the inner closure element with the annular rim of the container, a dispensing spout defining a dispensing opening in said panel of said outer closure element, means on said panel of said inner closure element sealingly engageable with said dispensing opening by movement of said outer closure element to its fully engaged position on the container threads, said dispensing opening being disengaged from said sealing means by approximately 180° rotation of said outer closure element away from said fully engaged position; a dispensing aperture in said panel portion of said inner closure element, thereby permitting dispensing flow of the container contents through said inner closure element; internally projecting means on the skirt portion of said outer closure element for retaining said inner closure element within said outer closure element, said last mentioned means permitting a limited axial movement of said outer closure element as a result of 180° reverse rotation without interfering with the sealing engagement of said inner closure element with the container annular rim, but removing said inner closure element from the container rim when said outer closure element is moved upwardly by an amount corresponding to approximately 360° rotation of said outer closure element from said fully engaged position on the container threads.

4,358,032
SNAP CONTAINER CLOSURE

Sidney M. Libit, 141 Lakeside Terrace, Glencoe, Ill. 60022

Filed Dec. 24, 1980, Ser. No. 219,990
Int. Cl.³ B65D *5/72*
U.S. Cl. 222—498 **14 Claims**

1. A closure cap comprising a base portion for attachment to a container and a top portion, the base having an orifice therethrough, the top being adapted to close the orifice, said top including a hinge dividing the top into first and second portions, means for attaching the first portion to the base in base overlying non-moving relationship spaced from the orifice, the second portion being movable from an orifice closing position

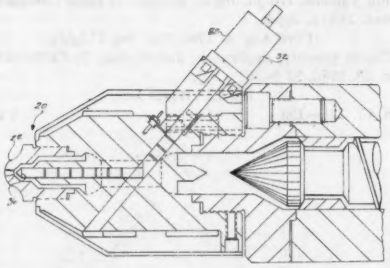


to an orifice open position by bending about said hinge when the first portion is in the attached base overlying relationship and means for retaining the second portion in the orifice open position.

4,358,033
INJECTION MOLDING ASSEMBLY

Robert H. Dykehouse, Sterling Heights, Mich., assignor to Export Tool Company, Toronto, Canada

Filed May 5, 1980, Ser. No. 146,689
Int. Cl.³ B29F *1/04*
U.S. Cl. 222—509 **6 Claims**



1. A combined injection molding unit nozzle and shut-off valve comprising:

a body including a central bore having an inner end and a threaded outer end, the inner end open to an injection chamber of the injection molding unit;

a plunger support supported by the central bore, portions of the outer periphery of the plunger support being removed to allow plasticized plastic to flow therepast, the plunger support having a central bore extending longitudinally therethrough and being concentric with the central bore of the body;

a plunger defining a shut-off valve slidingly supported within the plunger support central bore, the plunger including a conical outer end and a planar inner end;

a nozzle tip threadingly engaging the outer end of the body, said tip including a bore concentric with the central bore;

the conical outer end of the plunger having an included angle less than the included angle of the inner wall of the nozzle tip about the concentric bore;

an actuator plunger with an axis passing through the plunger at the inner end thereof;

an inner end of the actuator plunger angled to abut the plunger inner end, the included angle between axis of the actuator plunger and the axis of the plunger being greater than 100 degrees and less than 170 degrees;

a linear actuator affixed to an outer end of the actuator plunger to move the actuator plunger from a first position wherein the conical outer end of the plunger engages and closes the concentric bore in the nozzle tip to a second position wherein the conical outer end of the plunger moves inward to open the concentric bore in the nozzle tip.

4,358,034

SLIDING GATE VALVE WITH ORIFICE-ENCIRCLING SPRING

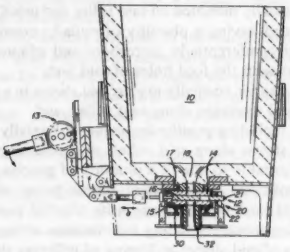
Robert D. Hind, Rotherham, England, assignor to USS Engineers and Consultants, Inc., Pittsburgh, Pa.

Filed Jan. 24, 1980, Ser. No. 114,815

Claims priority, application United Kingdom, Mar. 2, 1979, 7907429

Int. Cl.³ B22D *41/08*

U.S. Cl. 222—600 **4 Claims**



1. In a sliding gate valve for controlling the flow of molten metal from the pour opening of a bottom pour teeming vessel including means forming a valve frame suspended from the bottom of said vessel about the pour opening thereof, said frame containing a pair of vertically spaced orificed refractory plates having their orifices vertically aligned with said vessel pour opening, a gate formed of an orificed refractory plate movably disposed between said vertically spaced plates and means for moving said gate relative to said spaced plates to displace the orifice in said gate into and out of registry with the orifices in said spaced plates, the improvement comprising means for spring biasing said refractory plates into mutual face-to-face sliding contact, said means including:

(a) a fixed plate suspendedly attached to said frame;

(b) a thrust transmitter operatively positioned between said fixed plate and the lowermost of said pair of refractory plates and engaging the same annularly about the orifice therein; and

(c) spring means seated on said fixed plate and operative to provide an upward bias seriatim to said thrust transmitter, said lowermost refractory plate and said gate.

4,358,035

SYSTEMS FOR HOLDING SMALL ARTICLES IN A LOAD COMPARTMENT

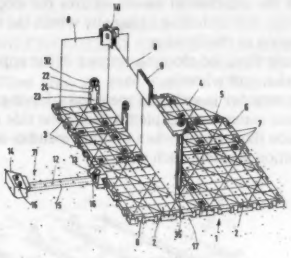
Hanns Heidecker, Ohlenkamp 28, D-2000 Hamburg 52, Fed. Rep. of Germany

Continuation of Ser. No. 54,175, Jul. 2, 1979, abandoned. This application Jan. 15, 1981, Ser. No. 225,448

Int. Cl.³ B60R *9/06*

U.S. Cl. 224—42.42 **8 Claims**

1. A system for holding small articles in a load compartment comprising at least one wall element and a base plate adapted to be laid on the load compartment floor and formed with a plurality of recesses in the form of grooves on the upper surface thereof, into which the edge of said wall element can be fitted vertically, said recesses extending longitudinally, transversely, and diagonally across the upper surface of said base plate, the base plate being provided with recesses for interconnecting with at least one other base plate by means of connecting means.



4,358,036

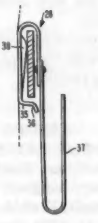
BELT CLIP

William F. Maltais, 124 Charles St., New Britain, Conn. 06051

Filed Mar. 27, 1981, Ser. No. 248,265

Int. Cl.³ A45F *5/02*

U.S. Cl. 224—252 **1 Claim**



1. A belt clip, comprising, in combination, a flat leaf spring bent into a generally elongated open loop, including an inverted U-shaped bend having front and rear downward legs extending therefrom, and a hook formed on a lower end of said rear leg, and a single rivet through said front leg pivotally holding a carried object on said clip; a forwardly bulge in said rear leg forming a hidden pocket on a rear side thereof, a rearwardly pivotable flat door on said rear leg for closing and opening said pocket; and a latching means for said hook comprising a latch arm affixed on a rear end of said rivet, said latch arm being pivotable, so as selectively to close a gap between a lower end of said front leg and said hook.

4,358,037

MODULAR LUGGAGE RACK WITH ACCESSORIES

Robert C. Heideman, Studio City, Calif., assignor to Amco Manufacturing Corporation, North Hollywood, Calif.

Filed Oct. 29, 1979, Ser. No. 88,864

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—321 **9 Claims**

1. A luggage-restraining device for use on a vehicle-mounted luggage carrier, comprising:

at least one luggage-supporting slat;

a stop member adapted to assume a first, low-profile configuration with respect to such slat, and adapted to engage luggage, when in a second, upstanding configuration with respect to such slat, to prevent the luggage from sliding along such slat in at least one direction;

attachment means connected with the stop member and adapted to secure the stop member to such slat while

permitting manual movement of the stop member between the first and second configurations;

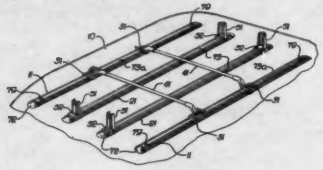
a bracket that slides lockably on such slat and by means of which the attachment means secures the stop member to such slat, and including a hinge by which the stop member is pivoted to the bracket;

a trim strip disposed along the center of the upper surface of such slat; and wherein

the stop member is a shaped metal part having:

two end extensions adapted to form one side of the hinge,

two side flaps which when the stop member is in its lower position straddle such slat,



an inward protrusion from at least one of said side flaps to engage the track and hold the stop member snugly against the track,

a central portion contoured to clear the trim strip, defining a tie-down hole near the end which extends furthest upward when the stop member is in its upstanding configuration, and

an edge near its opposite end which engages the bracket to block rotation about the hinge when the stop member is in its upstanding position.

4,358,038

PUNCH FOR PATTERN CARD

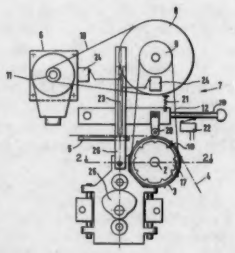
Hubert Kremer, Grefrath, and Josef Claassen, Goch, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,042

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939123

Int. Cl.³ G65H *17/38;* G03B *1/30*

U.S. Cl. 226—53 **6 Claims**



1. In a punching device for a pattern card for textile machines, having a step-by-step transport device and a centering device for pin wheels arranged on a shaft for the transport of the pattern card, the improvement wherein

said step-by-step transport device comprises a stepping motor,

a coupling operatively disposed between the stepping motor and the shaft,

a centering wheel fastened on said shaft,

a lever means for cooperating with said centering wheel and for simultaneously actuating said coupling.

4,358,039

PAPER FEED ROLLER ASSEMBLY

James M. Buzzell, Deerfield, N.H., assignor to Centronics Data Computer Corporation, Hudson, N.H.

Filed Nov. 3, 1980, Ser. No. 203,322

Int. Cl.³ G03B *1/24*

U.S. Cl. 226—79 **19 Claims**

1. In a web feeding mechanism a roller assembly for accommodating any one of a plurality of webs of differing widths and having feed holes, comprising:

an elongated cylindrical shaped roller;

a sleeve coaxially mounted on said roller and axially slidable thereon and having a plurality of radially extending pins spaced circumferentially thereabout and adapted for engagement with the feed holes of said web;

resilient means for normally urging said sleeve in a predetermined axial direction along said roller; and

said sleeve including positioning means for axially positioning said sleeve along said roller, said positioning means being adjustable to one of a plurality of precise predetermined positions, said resilient means being adapted to retain said positioning means in its selected position said positioning means including indentations arranged along one edge of said sleeve and being of differing depths and projection means on said roller cooperating with said indentations for axially positioning said first sleeve according to the indentation aligned with said projection.

4,358,040

STITCHERS

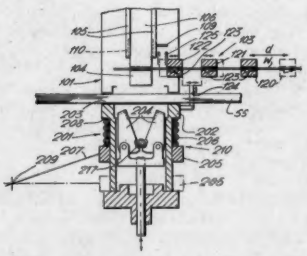
Ronald E. Stokes, Newport Pagnell, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1979, Ser. No. 106,422

Claims priority, application United Kingdom, Apr. 27, 1979, 7914810

Int. Cl.³ B42B *4/00*

U.S. Cl. 227—5 **21 Claims**



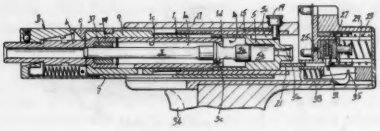
1. A wire stitcher apparatus having a cutter for cutting a length of wire from a supply thereof to form a staple and a stitcher head for forming and driving the length of cut wire for binding a set of sheets, the improvement comprising first means for advancing the wire through a fixed distance past the cutter and separate independent second means for further advancing the wire and said second means also positioning the cutter approximately equal to the thickness of the set.

4,358,041

POWDER-ACTUATED TOOL WITH POWER ADJUSTMENT AND ANGLE-FIRE CONTROL

Jean Ollivier, Valence, France, assignor to Olin Corporation, New Haven, Conn.

Filed Jun. 12, 1980, Ser. No. 158,953
Int. Cl.³ B25C 1/14, 1/18
U.S. Cl. 227—10 10 Claims



9. An improved powder-actuated tool comprising:

(a) a barrel assembly including a longitudinal bore, a power load-receiving chamber and a middle chamber communicating therebetween;

(b) a piston, slidably disposed in said barrel bore, including a piston head adapted to enter into said middle chamber;

(c) means for adjustably controlling the extent of penetration of said piston head into said middle chamber;

(d) a slide assembly, said barrel assembly being telescopically carried by said slide assembly and axially displaceable therein between a loading position and a battery position; and

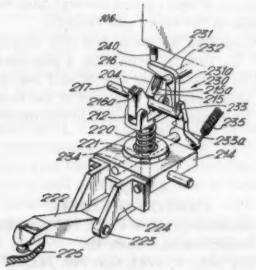
(e) means operably connecting said barrel assembly and said slide assembly, said connecting means maintaining a constant axial relation between said slide assembly and the muzzle end of said barrel assembly during adjustment of said penetration controlling means.

4,358,042

WIRE STITCHERS

Brian R. Lawrence, Olney, Great Britain, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1979, Ser. No. 106,193
Claims priority, application United Kingdom, Dec. 29, 1978, 50323/78
Int. Cl.³ B42B 4/00
U.S. Cl. 227—152 7 Claims



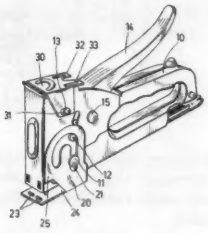
1. A stitcher for binding sets of sheets having a stitcher head for driving a staple through a set and an active clincher mechanism, the improvement including means for moving the clincher mechanism to an operative position towards and away from the stitcher head and into clamping relationship relative thereto with a set clamped therebetween, and to an inoperative position, said clincher mechanism including a pair of clinching ears adapted to be applied to the legs of a staple, spring drive means for driving said ears of the clincher to affect bending of the legs of the staple, said spring being loaded during movement of the clincher away from the head, and means for effecting actuation of the clincher ear drive in timed relation to the driving of a staple.

4,358,043

SPRING-ENERGIZED STAPLING MACHINE

Hui-Neng Chi, 17, 119 La., Tate St., Taichung City, Taiwan

Filed Mar. 28, 1980, Ser. No. 135,204
Claims priority, application Taiwan, Dec. 21, 1979, 6825081
Int. Cl.³ B25C 5/02
U.S. Cl. 227—155 2 Claims



1. An improved spring-energized stapling machine comprises a body having a base; an actuating arm pivotally mounted on the body; spring means for ejecting staples from the machine upon operation of the actuating arm; a check plate slidably mounted on the body and selectively movable into a position to immobilize the actuating arm, the check plate being mounted on the body by means of a pin extending through the body and through slots in the check plate; a movable fitting having a base panel with recesses therein and two side walls, each side wall having an inverted substantially U-shaped slot therein cooperative with a pair of pins on the body so as to permit the fitting being slidable between a first position at which the fitting is spaced from the base of the body to enable the recesses in the base panel to clinch staples ejected from the machine, a second position at which the fitting abuts against the base of the body to block the ejection of staples from the machine and a third position at which the base panel is angularly displaced through substantially 90° to allow staples to be ejected without clinching from the machine; and a slidable driving pin extended through an end portion of a tongue of the actuating arm and through a pair of opposed arcuate slots provided in the body and driven by operation of the actuating arm to move it in the arcuate slots, wherein after ejection of a staple from the machine upon upward movement of the actuating arm, ends of the driving pin are driven to the lower end of the arcuate slots to contact against upper edge of the side walls of the movable fitting respectively so as to move the base panel of the fitting a desired distance away from the base of the body.

4,358,044

APPARATUS FOR SOLDERING SOLDER ON CERAMIC SUBSTRATE

Hitoshi Igarashi, Tokyo, Japan, assignor to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,649
Claims priority, application Japan, Aug. 14, 1979, 54-103401
Int. Cl.³ B23K 20/10, 37/02
U.S. Cl. 228—1 R 3 Claims

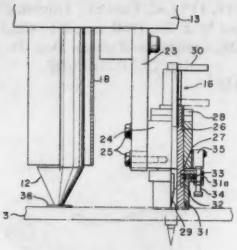
1. An apparatus for soldering a solder on a solderable substrate, comprising:

an ultrasonic oscillation mechanism having a vibration tip rotatably held and slidably mounted thereon, said vibration tip slidably movable in a vertical direction relative to an object for soldering;

a needle part placed at a predetermined distance and at a predetermined direction from said vibration tip, said nee-

dle part projected at about the level of an edge of said vibration tip;

means for enabling backward shifting of said needle part on contacting of said needle part with said object; and



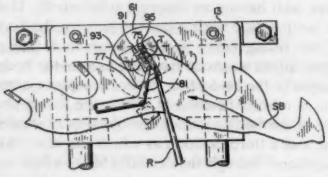
means for activating said ultrasonic oscillation mechanism such that ultrasonic vibration is applied to said vibration tip when said needle part is backwardly shifted a predetermined distance.

4,358,045

TIP POSITIONING BRAZING FIXTURE

George H. Jacobsen, 18241 NE. Cedar Dr., Battleground, Wash. 98640

Filed Aug. 13, 1980, Ser. No. 175,721
Int. Cl.³ B23K *37/04*
U.S. Cl. 228—49 R **1 Claim**



1. A brazing fixture comprising:

a frame,

means on said frame for supporting a toothed saw blade for circumferential advancement about a fixed vertical axis,

tip supporting means spaced from said axis for supporting a pre-ground tip, wherein said pre-ground tip has a cutting edge and a plurality of sides, said tip supporting means including a laying block, said laying block having a generally horizontal supporting surface for supporting the tip, said laying block also having a first stationary vertical stop for contact with one of the plurality of sides of the tip to determine its lateral position,

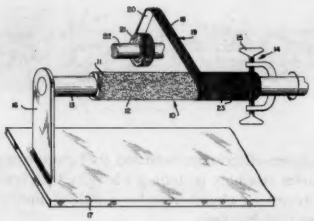
said laying block having a second stationary vertical stop which faces toward said axis for engaging the cutting edge of the tip to predispose its radial location independently of said means and independently of the saw blade, to facilitate the application of plural tips to the saw blade with all the tip ends accurately touching a circle concentric with said axis, whereby to eliminate the necessity of grinding the tip ends after application; said laying block being formed with a recess located between said supporting surface and said second vertical stop to accommodate a lower corner of the cutting edge, said first vertical stop projecting upwardly from said generally horizontal supporting surface, said first and said second vertical stops extending in the same direction.

4,358,046

ORIENTED GRAPHITE LAYER AND FORMATION

Clifford M. Detz, and John B. Lightstone, both of White Plains, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 17, 1977, Ser. No. 778,623
Int. Cl.³ C23C *9/00*; F28F *19/02*
U.S. Cl. 228—176 **10 Claims**



1. A method of forming an oriented graphite coating on a metallic substrate comprising the steps of:

(a) forming said metallic substrate by covering a copper or copper alloy base member with a continuous layer of nickel, nickel alloy, cobalt or cobalt alloy;

(b) providing a substantially uniform coating of particulate carbon on the metallic substrate;

(c) heating the coated metallic substrate in a nonreactive atmosphere to a temperature of between 800° C. and 1350° C. and below the melting point of said metallic substrate and maintaining said temperature for a period of time sufficient for saturational diffusion of said carbon into said substrate; and

(d) thereafter cooling the metallic substrate to a temperature below about 200° C., thereby providing a precipitated oriented graphite film at a surface of said substrate.

6. A method of forming an oriented graphite coating on a metal base material tube comprising the steps of:

(a) providing a substantially uniform coating of particulate carbon on one side of a thin metal foil;

(b) heating the coated metal foil in a nonreactive atmosphere to a temperature of between 800° C. and 1350° C. and below the melting point of said metal foil, and maintaining said temperature for a period of time sufficient for saturational diffusion of said carbon through said metal foil from said one side to the other side thereof;

(c) thereafter cooling the metal foil to a temperature below about 200° C., thereby providing a precipitated oriented graphite film at said other side of said metal foil; and

(d) bonding said metal foil one side to the outer surface of said metal base material tube and in thermal contact therewith.

4,358,047

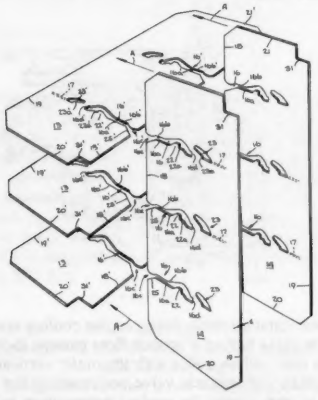
CARTON DIVIDER

Wallace O. Raubenheimer, New Paltz, N.Y., assignor to Jefferson Smurfit Incorporated, Alton, Ill.

Filed Mar. 9, 1981, Ser. No. 241,477
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—15 **12 Claims**

1. A collapsible carton divider having at least one substantially planar partition and one substantially planar cross-partition interlocked therewith along an imaginary line of intersection between their respective planes, each said partition and cross-partition having parallel and opposite first and second edges and partition interlock means for interlocking with each partition which interlocks therewith, each said partition interlock means comprising means defining an open-ended slot having opposite side edges extending inwardly from said first edge of the partition and spaced apart a distance which is substantially greater than the thickness of the partition and a

closed-end thereof located intermediate said first and second edges of the partition, a surface portion aligned with said slot and which determines, and extends beyond, said closed end of the slot towards said second edge of the partition, means defining a locking tab projecting from one of said side edges of said slot and providing a first abutment edge facing away from the open end of said slot, a portion of said one side edge of the slot being disposed between said locking tab first abutment edge and said closed end of the slot, means defining a tab-receiving opening within said surface portion and providing a second abutment edge facing away from the open end of said slot, said surface portion between said slot and said tab-receiving opening on each of said interlocked partitions being received in said slot of its interlocked partition, and said locking tab on each of said interlocked partitions being received in said tab-receiving opening of its interlocked partition with said first abutment edges respectively abutting said second abutment edges on the respective of said interlocked partitions, said closed end of each partition slot being disposed at a location which is midway between said first and second abutment edges of the partition, the respective of said closed ends of the slots of said interlocked partitions being in abutting engagement with each other thereby together defining another abutment edge interface between each said partition and its interlocked partition, and said tab-receiving opening of each said partition further



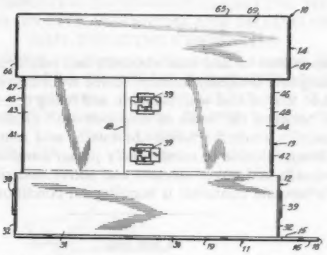
providing a tab-retainer edge aligned with said portion of said one side edge of said slot, the distance of projection of said locking tab on each of said partitions being substantially greater than the thickness of the partition whereby said locking tabs overlap the respective of said tab-retainer edges of said tab-receiving openings with which said locking tabs are respectively associated, the other side edge of said partition slot including a substantially arcuate length portion spaced laterally away from said locking tab and extending substantially to the closed end of said partition slot, said arcuate length portion including a holding edge portion closely adjacent to said slot closed end and spaced laterally away from the line of projection of said portion of said one side edge of said slot by a distance which is substantially equal to the thickness of its associated interlocked partition to support its said interlocked partition therebetween, each said partition and cross-partition interlock means further comprising a partition support tab projecting from said other side edge of said slot substantially adjacent to said open end of the slot, said partition support tab projecting into said slot to a location aligned, in the direction of said slot, with said holding edge portion adjacent to said slot closed end, whereby its said interlocked partition is urged towards said portion of said one side edge of said slot, by both said partition support tab and said holding edge portion, said partition surface portion between said tab-receiving opening and said second side edge of each said partition and cross-partition engaging said one side edge of said slot of its interlocked partition at a location between said locking tab of the partition and said open end of the slot, each said partition slot further including means defining a cut-out portion of said slot extending between said portion of said one side edge of said slot and said slot closed end, said cut-out portion being adjacent to said slot closed end and located opposite to said holding edge portion on said other side edge of the partition slot.

4,358,048

COLLAPSIBLE SHIPPING CONTAINER HAVING REINFORCED BASE ELEMENT

Julius B. Kupersmit, 145-80-228th St., Springfield Gardens, N.Y. 11413

Filed Apr. 24, 1981, Ser. No. 257,127
Int. Cl.³ B65D *5/36, 13/00*
U.S. Cl. 229—23 BT **3 Claims**



1. An improved collapsible shipping container comprising: a base element, a reinforcing element, a side wall element, and a lid element; said base element being of generally planar rectangular configuration, and having upper and lower surfaces; said reinforcing element including a bottom wall having its lower surface secured to said upper surface of said base element, front and rear walls foldably interconnected to said bottom wall, each having foldably interconnected flaps thereon, said front and read walls and associated flaps being interconnected to form an open topped enclosure; said side wall element including a single piece of fiberboard forming a rear wall, first and second side walls, and first and second front walls selectively secured in mutually overlapped relation when said container is erected and closed; said side and rear walls of said side wall element each having foldably interconnected elongated flaps at the lower edges thereof, said elongated flaps being secured to the upper surface of said bottom wall of said reinforcing element; said overlapping front walls having lower portions thereof disposed within said enclosure; said side walls of said side wall element having fold lines disposed thereon and positioned above said enclosure, whereby said side wall element may be folded to generally planar condition at least partially extending into said enclosure; said cover element including a top wall selectively overlying said enclosure, and side walls corresponding in height to those of said reinforcing element.

4,358,049

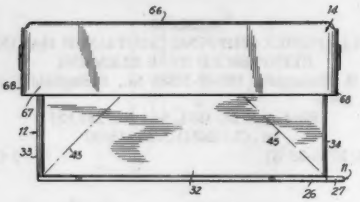
COLLAPSIBLE SHIPPING CONTAINER WITH REINFORCING INSERT

Julius B. Kupersmit, 145-80 228th St., Springfield Gardens, N.Y. 11413

Filed Apr. 24, 1981, Ser. No. 257,106
Int. Cl.³ B65D *19/20, 5/36*
U.S. Cl. 229—41 R **1 Claim**

1. In a collapsible shipping container including a planar base element, an integrated side wall element, a lid element and a reinforcing element; said base element including a planar wall, said wall having upper and lower surfaces, and four peripheral side edges; said side wall element including a plurality of fold-

ably interconnected planar walls corresponding in width to said peripheral side edges of said base element, each of said walls having a lower fold edge, a gluing flap secured at a respective fold edge to each of said walls, and to said upper surface of said base element along said peripheral side edges; at least two of said side walls having angularly disposed fold lines for collapsing said side wall element into a plane substantially



parallel to that of said base element; said reinforcing element including four hingedly interconnected walls corresponding in height to that of said wall element, and being removably positioned between the walls of said side wall element to lie in substantially abutted relation therewith; said reinforcing element being foldable to substantially planar condition for storage beneath said cover element and above said side wall element when said container is in collapsed condition.

4,358,050

AIR CONDITIONER CONTROL METHOD AND APPARATUS

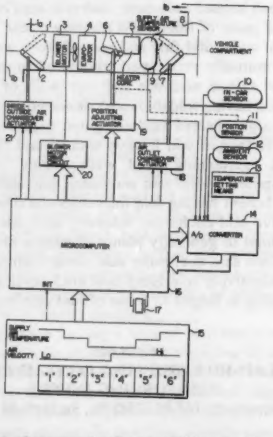
Masanori Naganoma, Kariya; Nobuo Kondo, Anjo; Eiichi Senda, Ohbu; Hitoshi Hibi, Kariya; Kunihiko Suzuki, Kariya; Nobuyoshi Ohta, Kariya, and Katsunori Ito, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 18, 1980, Ser. No. 160,452

Claims priority, application Japan, Jun. 22, 1979, 54-79544

Int. Cl.³ G05D *23/00*

U.S. Cl. 236—13 **11 Claims**



1. A method of automatically controlling an air conditioner system for a vehicle passenger compartment, said system comprising means for changing the direction of air discharged into said compartment, air blower means provided in said duct for driving the air at a variable speed, a discharged-air temperature sensor for sensing the temperature of discharged air, in-car sensor for sensing a temperature within said compartment, temperature setting means for setting a desired temperature for said compartment, and means for automatically maintaining the compartment temperature at said desired temperature in response to signals from at least said in-car sensor and said temperature setting means, said method comprising the steps of:

previously preparing a plurality of automatic control patterns, each of said patterns being independent of any said set desired temperature and including control data for controlling said air direction changing means and said blower means;

inputting a command signal to select one of said plurality of automatic control patterns; and

automatically controlling said air direction changing means and said blower means in response to a signal from said discharged air temperature sensor in accordance with a selected one of said automatic control patterns.

4,358,051

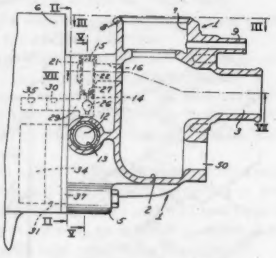
THERMOSTAT ASSEMBLY FOR AN ENGINE COOLING SYSTEM

Albert A. Hunt, Ongar, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 9, 1981, Ser. No. 232,753

Int. Cl.³ F01P *7/02*

U.S. Cl. 236—34.5 **5 Claims**



1. A thermostat assembly for an engine cooling system comprising a housing having a coolant flow passage therethrough having an inlet and an outlet with the outlet vertically higher than the inlet, a thermostat valve positioned in the inlet and operable in response to the coolant temperature to block or permit the flow of fluid through the flow passage, an air bypass passage having one end operatively connected to the inlet on the upstream side of the thermostat and having the opposite end connected to the outlet downstream of the valve, and a bleed valve in the bypass passage movable to an open position to allow air flow past the thermostat valve when the latter is closed as the engine cooling system is filled with coolant and movable to a closed position by fluid pressure, characterized by the housing having a fluid fill passage that connects to the coolant passage and has an inlet at a level higher than the coolant passage outlet and through which coolant may be introduced into the flow passage, the bleed valve being located in the housing at a level higher than the highest-most point of the thermostat valve.

4,358,052

HOT-WATER CENTRAL HEATING SYSTEM

Dieter J. Leinenbach, Eisenbahnstrasse 22, Merchweiler/Saar, Fed. Rep. of Germany (6689)

Filed Aug. 19, 1980, Ser. No. 179,524

Claims priority, application European Pat. Off., Aug. 21, 1979, 79103059

Int. Cl.³ F24D *3/00*

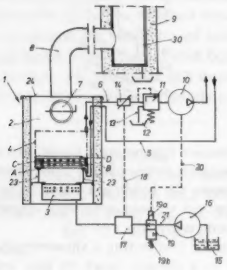
U.S. Cl. 237—8 R **11 Claims**

1. A hot-water central heating system including a boiler, a combustion chamber within the boiler, a burner beneath the

combustion chamber for producing hot firing gases, and a hot-water conduit system disposed above the burner, the conduit system being provided with a cold-water inflow and a hot-water outflow, and further comprising:

(a) a plurality of superjacent decks of conduits, said conduits of each deck being in parallel relationship within each deck, the conduits of one deck being oriented substantially crosswise with respect to the immediately adjacent decks;

(b) an adjustable heat-sensitive means being disposed in the hot-water outflow for monitoring the hot-water temperature,



(c) means in the fuel supply for controlling the flow rate of fuel to be fed in a modulated manner into the burner; and

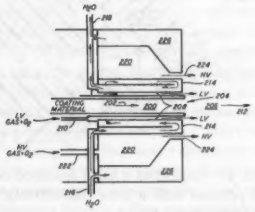
(d) a signal line connected to said heat-sensitive means and said controlling means, whereby said controlling means continuously supplies fuel at a flow rate responsive to said heat-sensitive means in accordance with the desired hot-water temperature to which said heat-sensitive means is set, so the exhaust gases leaving the hot-water conduit system are cooled to a temperature of less than about 400 K. (approximately 130° C.).

4,358,053

FLAME SPRAYING DEVICE WITH ROCKET ACCELERATION

Herbert S. Ingham, Northport, and Ferdinand J. Dittrich, Massapequa, both of N.Y., assignors to Metco, Inc., Westbury, N.Y.

Filed Nov. 26, 1980, Ser. No. 210,448
Int. Cl.³ B05B 7/20
U.S. Cl. 239—79 **1 Claim**



1. A flame spraying device comprising, in combination:

a coating material delivery tube with an exit orifice out of which a coating material can be ejected;

a plurality of combustible gas delivery tubes surrounding said coating material delivery tube each providing a passage for combustible gases, said combustible gas delivery tubes having exit orifices disposed proximate said material delivery tube exit orifice so that on combustion of the combustible gas, the coating material ejected from said coating material delivery tube enters a low velocity flame causing the coating material to be elevated in temperature;

a first cooling chamber surrounding said combustible gas delivery tubes for circulating a coolant and reducing the temperature of said flame spraying device;

a rocket chamber disposed around said first cooling chamber for burning a combustible gas therein and producing a high velocity stream of combustion product gases through an annular exit nozzle disposed proximate said exit orifice of said gas delivery tube so that said high velocity stream will accelerate the particles in said low velocity flame; and

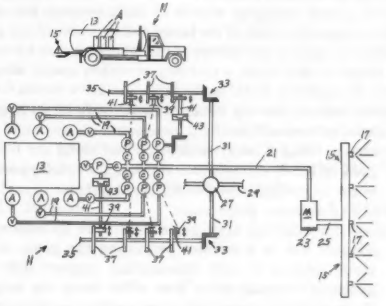
second cooling chamber surrounding said rocket chamber to reduce the temperature of said rocket chamber.

4,358,054

FIELD-SPRAYER TANK-VEHICLE HAVING MEANS FOR ON-SITE METERING AND MIXING OF SOIL-TREATING CHEMICALS

Arthur H. Ehrat, c/o Farmers Elevator Co., Lowder, Ill. 62662

Continuation of Ser. No. 829,331, Aug. 31, 1978, abandoned, which is a continuation of Ser. No. 685,972, May 13, 1976, abandoned. This application Dec. 22, 1980, Ser. No. 219,276
Int. Cl.³ B05B 9/06
U.S. Cl. 239—155 **8 Claims**



1. A field sprayer vehicle including a frame, and a drive shaft comprising:

a liquid holding tank, a spray boom, and a plurality of separate unrelated auxiliary material additive tanks all supported from said vehicle frame;

a main liquid, feed line connected between said liquid holding tank and said spray boom;

said spray boom mounted from said vehicle at a rear thereof and having a plurality of spaced nozzles, said nozzles being fed by a manifold connected to said main line;

said main line being fed by said liquid holding tank and by selected branched auxiliary material lines coupled to respective ones of said plurality of auxiliary material additive tanks;

a control valve means and a positive volume feed pump means in each of said branched auxiliary material lines;

a vehicle speed responsive mechanism operatively connected to said drive shaft of said field spray vehicle;

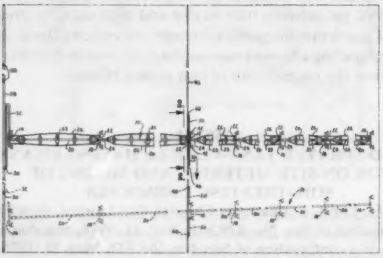
each of said positive volume feed pump means selectively driven by said vehicle-speed-responsive mechanism connected to said drive shaft of said field-spray vehicle, and

said vehicle-speed-responsive mechanism including speed-ratio-changing means to effect the metering operation of the respective pump means for thereby metering liquid of said liquid holding tank and material of selective ones of said plurality of auxiliary material additive tanks in correlated ratios for providing uniform quantity application of selected uniform composition mixtures.

4,358,055
GUIDANCE SYSTEM FOR LATERAL MOVE IRRIGATION MACHINES

Richard F. Reinke, Deshler, Nebr., assignor to Reinke Manufacturing Company, Inc., Deshler, Nebr.

Filed May 5, 1980, Ser. No. 146,510
Int. Cl.[3] B05B *3/00*
U.S. Cl. 239—183 2 Claims



1. In a lateral move irrigation machine having a plurality of mobile support units spaced apart in a substantially straight row, an elongate irrigation boom mounted on said support units at an elevated position above the field to be irrigated, a pair of gound engaging wheels on each support unit spaced apart on opposite sides of the boom and rotatable about axes of rotation located at the centers of the wheels, means for supplying water to said boom, a plurality of outlets spaced along the boom for applying water to the field, and drive means for each support unit for driving same through the field, an improved guidance system comprising:

means defining a linear path extending along the field in a preselected direction which the boom is to follow with the boom extending substantially perpendicular to said path;

a pair of elongate guide arms;

means for coupling both guide arms with an intermediate support unit in a manner permitting the guide arms to pivot relative to said intermediate support unit about generally vertical pivot axes offset from the irrigation boom and spaced apart from one another on opposite sides of the boom at locations more distant from the boom than the axes of rotation of the respective wheels of the intermediate support unit, said guide arms projecting from said axes in opposite directions whereby one guide arm leads the boom during movement of same along the field in one direction and the other guide arm leads the boom during movement of same along the field in the opposite direction;

a guide member carried on each guide arm, said guide members being restricted to movement along said path to thereby effect relative pivotal movement between said guide arms and said intermediate support unit upon deviation of said intermediate unit from said preselected direction;

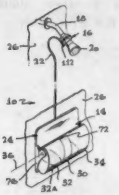
means responsive to relative pivotal movement between said one guide arm and said intermediate support unit for controlling the drive means of selected support units on opposite sides of said intermediate unit in a manner to prevent either end of the boom from moving ahead of or behind said intermediate unit when the boom is moving in said one direction; and

means responsive to relative pivotal movement between said other guide arm and said intermediate support unit for controlling the drive means of said selected support units in a manner to prevent either end of the boom from moving ahead of or behind said intermediate unit when the boom is moving in said opposite direction, whereby the boom is maintained substantially perpendicular to said path as it is driven through the field.

4,358,056
SHOWER DISPENSER

Bart E. Greenhut, Santa Monica, and Oded Saphir, Los Angeles, both of Calif., assignors to Emmett Laboratories, Inc., Santa Monica, Calif.

Filed Dec. 28, 1979, Ser. No. 108,130
Int. Cl.[3] B05B *7/30*
U.S. Cl. 239—305 5 Claims



1. A shower dispenser for mixing a liquid into shower water that will flow through a shower head, comprising:

a reservoir assembly for holding a liquid to be dispensed;

a conduit connected to said reservoir assembly to carry liquid therefrom; and

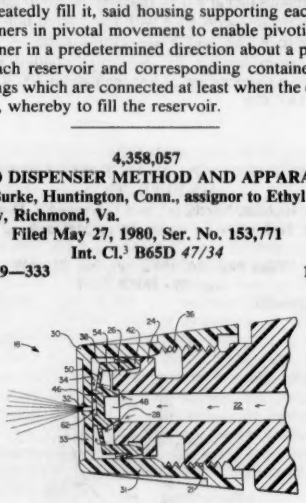
a mixer coupling for connecting a shower water supply and said conduit, to a shower head, to mix water from the outlet and liquid from the reservoir assembly;

said reservoir assembly including a housing forming first and second reservoirs which can each hold a small quantity of liquid to be mixed into the shower water, a pair of containers which are each detachably mounted to said housing and which can each hold more than one of said reservoirs to repeatedly fill it, said housing supporting each of said containers in pivotal movement to enable pivoting of the container in a predetermined direction about a pivot axis, and each reservoir and corresponding container having openings which are connected at least when the container pivots, whereby to fill the reservoir.

4,358,057
FLUID DISPENSER METHOD AND APPARATUS

James E. Burke, Huntington, Conn., assignor to Ethyl Products Company, Richmond, Va.

Filed May 27, 1980, Ser. No. 153,771
Int. Cl.[3] B65D *47/34*
U.S. Cl. 239—333 16 Claims



1. A nozzle for fitment to a hand actuated liquid pump having a barrel portion with a bore therethrough for passage of liquid, said nozzle comprising:

a. an integrally formed nozzle cap which includes

i. an end wall having an aperture through which liquid from said bore is dispensed, and

ii. a skirt portion having mounting means for mounting said nozzle cap around the end portion of said barrel; and

b. an integrally formed thermoplastic sealing means attached to said barrel and enclosed by said nozzle cap, said sealing means having

i. a peripheral seal portion to provide a liquid-tight seal

around said barrel between said nozzle cap and said barrel, and

ii. a check valve portion movably positioned at the mouth of said bore, said check valve portion including a seal member which selectively forms a liquid-tight bore seal with said mouth of said bore to close off the flow of liquid therethrough, and a spring member having a plurality of resilient arcuate segments which are connected to said seal member at one of their ends and to the remainder of said check valve portion at the other of their ends, and said spring member being in operative relationship with said seal member whereby said spring member biases said seal member to form its said liquid-tight bore seal, but said spring member having a biasing strength sufficiently low to allow liquid pressure in said bore, developed by actuation of said pump, to move said seal member away from said bore so that said liquid-tight bore seal is opened and liquid in said bore can pass to said aperture in said nozzle cap.

4,358,058

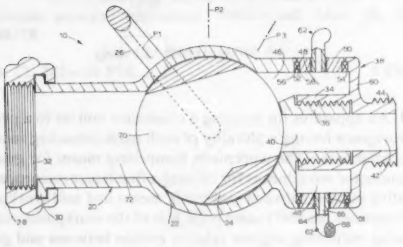
AUTOMATIC FOGGING NOZZLE

Scott A. Bierman, 679 S. Wickham Rd., Baltimore, Md. 21229

Filed Jan. 30, 1981, Ser. No. 230,021

Int. Cl.³ B05B *1/16*

U.S. Cl. 239—447 **2 Claims**



1. In a nozzle system with a housing having means for projecting a substantially axial stream of fog and the like from a nozzle forwardly onto a fire in an enclosure and the like, coupling means for introducing liquid at a first end of the housing, and means including a handle for controlling passage of liquid through the housing, the improvement comprising: means for shielding against and breaking up hot gas currents blown back to the nozzle system as result of said projection of fog, including means for propelling a whirling cone of fog against said hot gas currents, said means for controlling selectively limiting operation to: a first mode in which the means for projecting and the means for propelling concurrently operate, a second mode in which only the means for projecting operates and a third mode in which both the means for projecting and the means for propelling are inoperative; the means for controlling including valving means in the form of a transverse cylindrical journal in said housing, a cylindrical valve body with a valve passage therethrough in said transverse cylindrical journal, said means for projecting a substantially axial stream of fog including said housing having a first passage extending axially of the housing in a forward direction from said valving means for connection to said nozzle for liquid flow thereto; said means for propelling including a second passage offset from the first passage and extending forwardly from the valving means for conducting liquid to an annular recess at said means for propelling, a rotary sleeve around said annular recess, and a plurality of fog expelling heads mounted on said rotary sleeve in position causing reaction from fog expulsion by said fog expelling heads to rotate said rotary sleeve.

4,358,059

ELECTROSTATIC SPRAYING

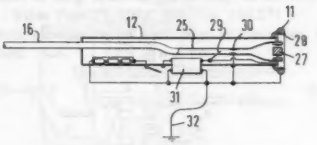
Ronald A. Coffee, Haslemere, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 3, 1980, Ser. No. 203,624

Claims priority, application United Kingdom, Nov. 19, 1979, 7939951

Int. Cl.³ B05B *5/02*

U.S. Cl. 239—691 **5 Claims**



1. An electrostatic sprayer comprising a sprayhead at which spray liquid is electrically charged and atomised, an electrically insulating conduit for conveying liquid to the sprayhead, an ion injection electrode means mounted in the conduit for injecting ions into the liquid, an ion discharge electrode means mounted in the conduit downstream of the ion injection electrode for discharging said ions, and means for providing a potential difference between the two electrodes sufficient to produce hydrostatic pressure for conveying liquid in the conduit to the sprayhead.

4,358,060

DEVICE FOR THE TREATMENT OF BULK MATERIAL

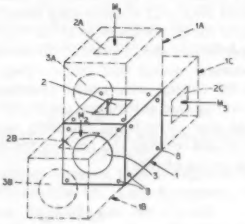
Ernst Hrabalek, Brantinggasse 27, 1100 Vienna, Austria

Filed Nov. 5, 1980, Ser. No. 204,287

Claims priority, application Austria, Nov. 8, 1979, 7169/79

Int. Cl.³ B02C *18/22, 18/24*

U.S. Cl. 241—65 **10 Claims**



1. A device for the treatment of bulk material, comprising:

a modular unit in the form of a prismatic block with six sides having a first throughgoing bore extending between a first pair of said sides and a second throughgoing bore extending between a second pair of said sides while intersecting said first bore, at least said first and second pairs of sides being provided with mounting formations offset from said bores;

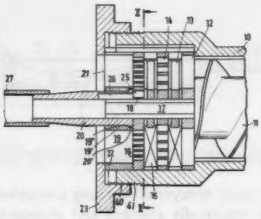
a drive motor secured to one of the sides of said first pair by the mounting formations thereof and provided with a shaft extending into said block along the axis of said first bore; and

tool means on said shaft in a region of intersection of said bores, said second bore forming an inlet and an outlet for bulk material to be processed by said tool means, said mounting formations enabling the attachment of substantially identical modular units to sides of said block not occupied by said drive motor.

4,358,061
MEAT GRINDER

Karl Richter, Kleinostheim, Fed. Rep. of Germany, assignor to Eisenwerke Fried. Wilh. Duker GmbH & Co., Karlstadt, Fed. Rep. of Germany

Filed Apr. 1, 1980, Ser. No. 136,290
Int. Cl.³ B02C *18/36*
U.S. Cl. 241—82.4 **4 Claims**

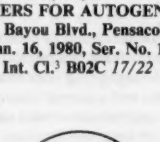


1. In a meat grinder, having a housing with a central axis, a rotating helical auger to feed material axially to a cutting assembly arranged co-axially with respect to said auger along the central axis of the meat grinder, at least one perforated disk having a frontal area facing the auger and provided with a central boss, a rotatable drive shaft extending co-axially from said auger receivable in a central bore through said boss, at least one cutting blade driven by said drive shaft in front of the frontal area of the perforated disk between the auger and the perforated disk, whereby the solid particles contained in the material to be cut are separated and collected in front of the frontal area of the perforated disk, the improvement comprising an outlet means located in the vicinity of the central axis comprising at least one outlet channel through said boss of the perforated disk near said bore thereof, said outlet channel having a size comparatively large by comparison with the holes of the perforated disk whereby the solid particles separated and collected in front of the frontal area of the perforated disk pass through said outlet channel, a counter-ring co-axial with and adjacent to the perforated disk on the side opposite the frontal area, said counter-ring being substantially open in the area of the perforations to avoid blocking the perforations in said perforated disk, a central, thick-walled pipe piece rotatably mounted within said counter-ring and being rotatable around the central axis, outlet openings in said pipe piece which overlap said at least one outlet channel in the perforated disk, said pipe piece being rotatably adjustable to adjust the amount of said overlap and thereby the effective size of said at least one outlet channel.

4,358,062
TILTED LIFTERS FOR AUTOGENOUS MILLS

Yun-Song Wei, 2319 Bayou Blvd., Pensacola, Fla. 32503

Filed Jun. 16, 1980, Ser. No. 159,666
Int. Cl.³ B02C *17/22*
U.S. Cl. 241—284 **7 Claims**

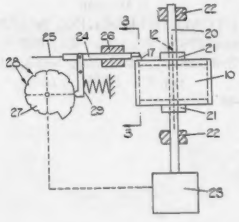


1. In an autogenous mill including a casing and a number of lifters on both shell and liners within the casing, the improvement comprising said lifters having teeth which are inclined toward the direction of motion of the mill, said teeth having a center line which will substantially coincide with a mean locus of falling rocks within the mill, said mean locus being substantially a logarithmic spiral, said center line being straight for better resistance to buckling.

4,358,063
METHOD AND APPARATUS FOR WINDING CONDUCTOR COILS ON RADIALLY EXTENDING PARTS OF A WORKPIECE

Charles F. E. Pierce; George R. Waldock, both of Hempstead, and Noel J. Woolford, Leighton Buzzard, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jun. 2, 1980, Ser. No. 155,581
Claims priority, application United Kingdom, Jun. 26, 1979, 7922241
Int. Cl.³ H02K *15/09*
U.S. Cl. 242—7.03 **4 Claims**



1. An apparatus for winding a conductor coil on to a part of a workpiece having a plurality of such parts extending radially of a polar axis of the workpiece, comprising means for guiding a conductor wire, means for causing a first linear reciprocating relative motion between said guide means and said workpiece in directions parallel to said polar axis of the workpiece and for causing oscillating angular relative motion between said guide means and said workpiece about said polar axis thereof, the movements constituting said first linear motion alternating with the movements constituting said angular motion, means for causing a second linear relative motion between said guide means and said workpiece radially of said polar axis thereof, and means for modifying the radial position of said guide means relative to said workpiece polar axis during each of the angular movements which constitute said angular motion, said modifying means including means for providing successive radially inward and radially outward movements during each said angular movement.

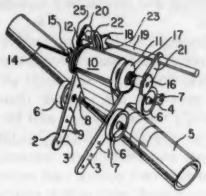
4,358,064
PIPE WRAPPING MACHINE

Maurice N. Garneau, Box 137, Nisku, Alberta, Canada (T0C 2G0)

Filed Jan. 16, 1981, Ser. No. 225,661
Claims priority, application Canada, Feb. 5, 1980, 345098
Int. Cl.³ B65H *81/08*
U.S. Cl. 242—7.23 **4 Claims**

1. A machine for wrapping a pipe with a strip of material comprising a frame, said frame including a pair of substantially inverted V-shaped ends for straddling a pipe to be wrapped; bracket means including axle means located substantially at the vertex of each said end for rotatably supporting a roll of said material between said ends; roller means rotatably mounted on each arm of each said end for movably supporting said frame on a pipe to be wrapped; and adjustment means on one said end for moving one end relative to the other frame end, so that the

rollers on one end are out of alignment with the rollers on the other frame end, whereby when the frame is moved on a pipe



with the free end of the material attached to the pipe, the frame and the tape follow a helical path of travel along the pipe.

4,358,065

APPARATUS FOR PRODUCING THREAD OR YARN RESERVE WINDINGS ON A BOBBIN TUBE

Andreas Schwander, Seuzach, and Dieter Thalmann, Winterthur, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

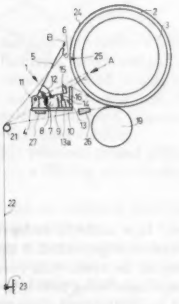
PCT No. PCT/EP79/00013, § 371 Date Nov. 9, 1979, § 102(e) Date Nov. 9, 1979, PCT Pub. No. WO79/00803, PCT Pub. Date Oct. 18, 1979

PCT Filed Mar. 12, 1979, Ser. No. 177,754

Claims priority, application Switzerland, Mar. 21, 1978, 3048/78

Int. Cl.³ B65H *54/02, 54/34*

U.S. Cl. 242—18 PW **6 Claims**



1. An apparatus for producing thread reserve windings on a bobbin tube placed on a rotating bobbin chuck, said apparatus comprising

a pivotally mounted lever movable between a rest position and a set back position and having a thread guide for guiding a thread into a thread catching zone of the bobbin tube when in said rest position;

a pivotally mounted thread stop offset from said thread guide towards a longitudinal center of the bobbin tube;

a carrier element for carrying said thread stop with said lever during pivoting of said lever in a first direction away from said rest position towards said set back position;

a first force means for pivoting said lever in a second direction opposite said first direction;

a second force means for pivoting said thread stop in said second direction;

a damping element for dampening pivoting of said thread stop in said second direction; and

a thread guide curve in a plane parallel to the bobbin tube for receiving a thread thereon during pivoting of said lever in said second direction, said thread guide curve being downwardly curved in a direction towards the longitudinal center of the bobbin tube for guiding a thread thereon after catching in said catching zone.

4,358,066

APPARATUS FOR SUPPORTING PAPER REELS IN WINDING MACHINES

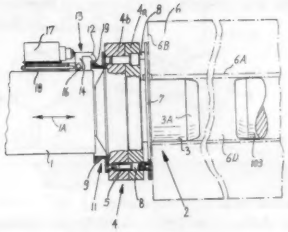
Robert Deutschle, Bokholt-Hanredder, and Wolfram Wolf, Bilsen, both of Fed. Rep. of Germany, assignors to E. C. H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,171

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007666

Int. Cl.³ B65H *17/02*

U.S. Cl. 242—68.4 **13 Claims**



1. Apparatus for supporting a reel which includes convoluted paper or like flexible material and has two end faces and an axial hole extending between such end faces, comprising a trunnion arranged to extend into one end of the hole in a reel; a stop adjacent to one end face of the reel whose hole receives said trunnion, said stop and said trunnion being movable in the axial direction of the trunnion and of the reel into which said trunnion extends; sensor means arranged to monitor the distance between the one end face of the reel into which said trunnion extends and said stop; signal generating means; and an operative connection between said signal generating means and said sensor means, including means for actuating said signal generating means when said distance exceeds a predetermined value.

4,358,067

METHOD OF PRODUCING PRESSURE-SENSITIVE COPYING SHEETS

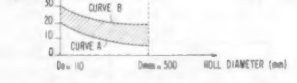
Masao Kanda, and Makoto Yoshida, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 19, 1978, Ser. No. 971,130

Claims priority, application Japan, Dec. 27, 1977, 52-159550

Int. Cl.³ B65H *59/00*

U.S. Cl. 242—75.51 **10 Claims**



1. A method of producing pressure-sensitive copying sheets which comprises winding a pressure-sensitive copying sheet having a microcapsule coating comprising microcapsules which have an average particle size of 3 to 8 microns and which contain a hydrophobic oil containing 3–6% by weight of a color former at an initial winding tension of 35 kg/m or less at the minimum roll diameter and, while winding, continuously reducing the winding tension to an amount of about 40 to

70% of the initial winding tension at said minimum roll diameter as the diameter of the roll increases.

4,358,068

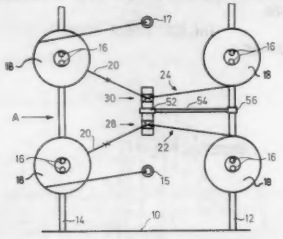
THREAD RETAINER

Hans-Joachim Weiss, Ulisbach, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Aug. 13, 1980, Ser. No. 177,628

Int. Cl.³ B65H *49/02*

U.S. Cl. 242—131 **19 Claims**



1. A thread retainer comprising

a carrier defining an open-ended thread passage having an axis passing through said open-ends thereof and a side access opening permitting a continuous length of thread to be extended through said passage by movement into the passage via said access opening in a thread entry direction transverse to said axis,

at least one gate member movable on said carrier for controlling access to said passage via said opening,

an abutment surface on said carrier,

guiding means on said carrier for guiding movement of said movable gate member in predetermined directions towards and away from a position of contact with said abutment surface and transverse to both said thread entry direction and said axis, and

said side access opening being closed when said gate member contacts said abutment surface and being opened when said gate member moves out of contact with said abutment surface.

4,358,069

PROCESS AND DEVICE FOR GENERATING TAPE TENSION IN A TAPE TRANSPORT APPARATUS

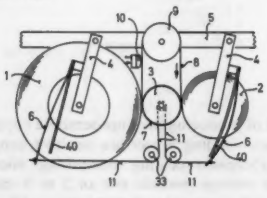
Hans Schmid, Limburgerhof; Klaus Becker, Ludwigshafen; Guenter Leuchtmann, Mannheim, and Klaus Schoettle, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,534

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942950

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—192 **12 Claims**



3. In a tape transport apparatus having

two moveable carriers respectively mounting two reels of tape, alternately serving as supply reel and take-up reel, for rotation,

at least one motor-driven capstan having a resiliently deformable portion and contacting said reels of tape under pressure, and

means for producing a higher compressive force, and hence a higher degree of deformation for said resiliently deformable peripheral portion, at the point of contact between the take-up reel and the capstan than at the point of contact between the supply reel and the capstan, thereby to generate at said points correspondingly different peripheral speeds and thus create tension in the section of tape between said two points, said means comprising

a spring-means biased cable or belt system interconnecting said carriers,

a rotatable member common to, and centrally located between, said two reels over which member said cable or belt system is guided, and

means for driving said rotatable member in a sense opposite to that of the capstan so as to impart a positive driving torque to said cable or belt system.

4,358,070

MAGNETIC TAPE CASSETTE

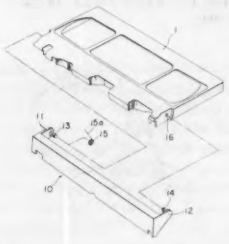
Masatoshi Okamura, and Kimio Tanaka, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,550

Claims priority, application Japan, Jan. 28, 1980, 55-8773[U]

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—197 **3 Claims**



1. In a magnetic tape cassette comprising a tape running plane for a magnetic tape provided in the front of the casing assembly consisting of an upper half casing and a lower half casing, said magnetic tape being held in wound form and being capable of running inside the casing assembly and a front cover mounted to the casing assembly so as to open and close at the front of the assembly, and front cover being actuated by spring action in the direction closing the front part of the casing assembly by positioning one end of a coil spring fitted to the pivot pin in a rectangular groove formed in an inner surface of the upper half casing, an improvement characterized in that a rib having a slanted surface which is lowered toward said groove is provided at the side of said groove.

4,358,071

CASSETTE CASE

Masatoshi Okamura, Saku, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed May 20, 1980, Ser. No. 151,678

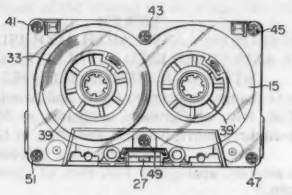
Claims priority, application Japan, May 24, 1979, 54/70150[U]

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—199 **2 Claims**

1. In a tape cassette that includes a cassette body having sections thereof which are adapted to be contacted by a tape, the improvement wherein said sections have a surface roughness within the range of about 3 to 15 microns, and wherein

said body comprises a metal frame formed by die casting, a first plastic plate provided on one side of said frame, and a second



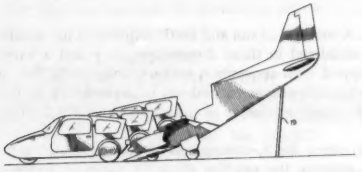
plastic plate on the other side of said frame, said tape contact sections of said body constituting parts of said metal frame.

4,358,072

LAND VEHICLE AND AIRCRAFT COMBINATION

Roger Williamson, 2862 S. 2nd East, Apt. 62, Salt Lake City, Utah 84115

Filed Apr. 8, 1980, Ser. No. 138,320
Int. Cl.³ B64C *39/00*
U.S. Cl. 244—2 **13 Claims**



1. Combination road and air vehicle comprising:
an airframe with fuselage, wings and tail elements;
flight propulsion means attached to said airframe;
a nose platform extending forward from the bottom of said fuselage, said platform adapted to receive and support a small self-propelled land vehicle;
tricycle landing gear attached to said airframe with the nose wheel attached by a folding strut to the underside of said platform;
aircraft control means on a folding stalk foldably attached to the top side of said platform;
land vehicle having a power plant and wheels, said vehicle having a central longitudinal opening in its bottom surface sized to allow said folding stalk to be raised into the vehicle compartment from the top side of said platform;
locking means on said platform to lock said vehicle to said platform.

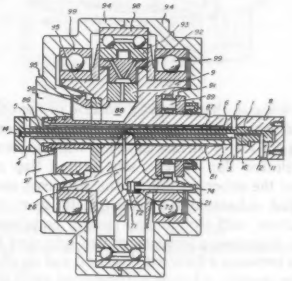
4,358,073

FLUID MOTOR WITH MOVEABLE MEMBERS WORKABLE INDEPENDENTLY OF ITS DRIVE MEANS

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 800,756, May 26, 1977, abandoned, and a continuation-in-part of Ser. No. 610,871, Sep. 8, 1975, abandoned, which is a division of Ser. No. 416,237, Nov. 15, 1973, abandoned, which is a division of Ser. No. 131,782, Apr. 6, 1971, Pat. No. 3,790,105, said Ser. No. 800,756, is a continuation-in-part of Ser. No. 465,413, Apr. 30, 1974, abandoned. This application Oct. 25, 1978, Ser. No. 954,555
Int. Cl.³ B64C *15/00, 29/00*
U.S. Cl. 244—12.1 **5 Claims**

1. An air-borne craft which includes at least one propeller which is driven by a hydrostatic fluid motor and wherein said fluid motor receives a hydrostatic pressure fluid supplied by a hydraulic fluid flow supply means through respective fluid lines to said fluid motor, and which further includes in said hydrostatic fluid motor a housing, revolvably mounting a rotor, containing working chambers for the reception of pressurized fluid and displacement means for the transfer of force of fluid to a portion of the rotor and to revolve the rotor and a control body associated to the rotor and to the housing to control the flow of fluid into and out of the working chambers,
wherein a passage body extends from a portion of said housing into a centric bore of said rotor independently of said control body;
wherein said passage body includes two ports, two control fluid passages and two control ports;
wherein said passage body is substantially stationary relatively to said rotor, and has a fitting portion interrupted by said control ports;
wherein an axially moveable piston is provided on said rotor and said rotor includes a seal portion of a configuration complementary to said fitting portion and able to seal therealong;



wherein said piston includes passages periodically aligning by an alternation with one of said control ports at one time of said alternation and with the other of said control ports at an other time of said alternation;
wherein said rotor carries a fluid pressure housing which includes a pair of pressure chambers with springs and said piston therein while said passages alternatingly communicate one of said pressure chambers with one of said control ports; and,
wherein said piston seals between said pressure chambers, is axially moveable in said pressure chambers and is having a connection member which extends through one of said pressure chambers and out of said one of said pressure chambers through one end of said one of said pressure chambers whereby it is sealingly fitted in said one end of said one of said pressure chambers.

4,358,074

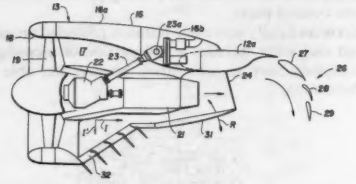
PROPULSION SYSTEM FOR V/STOL AIRCRAFT

Allen H. Schoen, Woodbury, N.J.; John J. Schneider; David Bevan, both of Media, Pa.; Harold Rosenstein, Havertown, and David R. Woodley, Media, both of Pa., assignors to The Boeing Company, Seattle, Wash.

Filed May 24, 1979, Ser. No. 42,263
Int. Cl.³ B64C *15/02, 21/04, 29/00*
U.S. Cl. 244—12.4 **9 Claims**

1. A propulsion system yaw control for V/STOL aircraft having a fuselage and a wing extending on either side of the fuselage comprising, in combination, at least two wing mounted nacelles configured with said wing on opposite sides of said fuselage, each of said nacelles including an interior defining a duct having a forward portion defining an air inlet opening and an aft portion defining a rear air exit opening, a chin blowing nozzle in the underside of the forward portion of each of said nacelles situated between the forward air inlet opening and the rear air exit opening of the nacelle, a fan and at least one engine for driving the fan disposed within the duct

of each of said nacelles, said engine being of the type generating a core exhaust flow, said fan being mounted for rotation between the forward air inlet opening and the chin blowing nozzle of the nacelle, said chin blowing nozzle being further situated forward of the engine core exhaust, and having a plurality of adjustable cascaded vanes disposed therein for pivotal movement between a forward direction and an aft direction relative to the aircraft, said vanes serving to divert one portion of the airstream from said fan from its flow direction in said duct outwardly from the nacelle, and a slotted flap system mounted on said wing aft of the rear air exit opening of each of said nacelles, each of said nacelles being mounted on



said wing so that at least a portion of the other portion of the airstream and the engine core exhaust are directed below said wing for lower surface blowing with respect to said wing and the slotted flap system, said slotted flap system serving to divert the other portion of the airstream and the engine core exhaust exhausted from the nacelle from its exhausted flow direction, said slotted flap system comprising a plurality of flaps including a lowermost flap arranged for pivotal movement between a forward direction and an aft direction relative to the aircraft, wherein a differential pivotal movement of the vanes and the lowermost flap on each side of the fuselage effects yaw control of the aircraft.

4,358,075

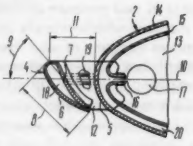
ANTI-ICING DEVICE FOR AERODYNAMIC STRUCTURES OF AIRCRAFT

Oleg K. Antonov, ulitsa Ogareva, 1, Kiev, U.S.S.R.

Continuation of Ser. No. 697,254, Jun. 17, 1976, abandoned. This application Nov. 18, 1977, Ser. No. 853,307

Int. Cl.³ B64D *15/02*

U.S. Cl. 244—134 R **6 Claims**



1. An improved anti-icing apparatus for preventing ice formation on the aerodynamic surface of an aircraft, in particular a horizontal tail, said apparatus having an elongated anti-icing member installed in front of the tail being protected, in a zone not exceeding the thickness of the tail at a distance from a conventional frontal surface of the tail, along the whole length thereof, and along the frontal surface, the tail retaining its conventional airfoil profile in its frontal portion, said improvement comprising: defining said anti-icing member by an airfoil profile in its cross section, the distance between the tip of the anti-icing member and the frontal surface of the tail being equal to 1–3% of the chord of the tail, the frontal surface and a back surface of said anti-icing member defining a duct for the passage of an accelerated air stream around the frontal surface of the tail being protected, said anti-icing member having a profile with a chord equal to 3–8% of the chord of the tail being protected, said anti-icing member being located in front of the tail at an angle of 30°–60° to the tail chord plane.

4,358,076

METHOD OF SUN AND EARTH ACQUISITION FOR THREE AXIS STABILIZED SATELLITES EQUIPPED WITH ACQUISITION SENSORS

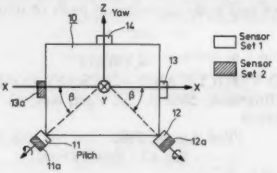
Benjamin O. Lange, Sunnyvale, Calif., and Arnold Scheit, Munich, Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,444

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1977, 2749868

Int. Cl.³ B64G *1/36*

U.S. Cl. 244—164 **6 Claims**



1. A method of sun and earth acquisition for satellites which are stabilized in three dimensions (x, y and z axes) and are equipped with acquisition sensors, comprising the cumulative or alternative steps carried out in dependence on the position of the satellite relative to the sun (sun vector $S=(S_x, S_y, S_z)$), of:

(a) when the S_y-component of the sun vector is not sensed, rotating the satellite about its x-axis at a rate ω_x, while damping the rotation of the satellite about its y-axis and z-axis bringing the respective speeds around these axes ω_y, ω_z toward zero, until S_y can be measured;

(b) when the S_z-component of the sun vector is not sensed and the S_y-component of the sun vector is measured, controlling the satellite about its x-axis in such a way that the sun remains in the x-z-plane, and rotating the satellite about the y-axis at a rate ω_y until S_z can be measured, with $\omega_z=0$ being maintained; and

(c) when the S_y-component and S_z-component are measured, controlling the S_y-component by regulating about the z-axis and controlling the S_z-component by regulating about the y-axis, and causing the satellite to rotate about a random axis in the linearity range of the sensors measuring the z-component and the y-component in order to start an earth-seeking mode of the satellite.

4,358,077

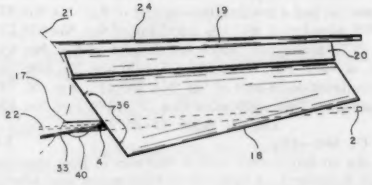
TRANSVERSE WING ACTUATION SYSTEM

Paul K. Coronel, P.O. Box 134, Kailua-Kona, Hi. 96740

Filed Jun. 16, 1980, Ser. No. 160,121

Int. Cl.³ B64B *3/54, 3/44*

U.S. Cl. 244—218 **2 Claims**



1. What is claimed is an aircraft sustentation system com-

prised of a fuselage, and two sets of swept and tapered wings; the primary wings being fixed to the fuselage of the aircraft above and in front of the second set of wings, this second set being capable of remaining in a position parallel to the primary wings with the leading and trailing edges of both sets of swept, tapered wings also remaining parallel for high speed flight, the second set of wings capable of being tilted in a manner where the leading edge of the secondary wings approach the trailing edges of the primary wings in a manner to create one high lift producing airfoil from the two individual sets of wings, wherein the improvements comprise:

a means of tilting the secondary wing from the parallel high speed position to the tilted high lift position utilizing a wing tilt lever arm with a fixed and attached transverse wing support arm, a transverse wing tilt lever mounting bearing and a universal transverse wing actuation arm bearing, both bearings cooperating with each other to support the wing tilt lever and wing actuation arm as a unit during actuation of this system, and both bearings being located a distance from the junction where the wing tilt lever and the transverse wing actuation arm meet to form one unit which rotates upon a motive force from the power source, thus canting, laterally tilting, and forward sweeping the rearward swept, tapered transverse wing in a manner where the leading edge of the transverse wing approaches the trailing edge of the swept primary wing with a parallel relationship between the edges, thus forming one high lift producing airfoil.

4,358,078

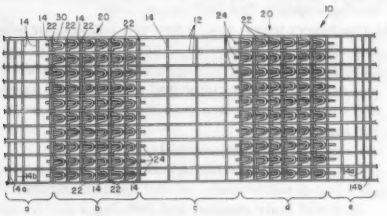
PIPE REINFORCING FABRIC

Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

Continuation of Ser. No. 49,096, Jun. 18, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 234,022

Int. Cl.³ E04C *5/02*

U.S. Cl. 245—2 **2 Claims**



1. In a wire fabric, having a plurality of circumferential defining line strands extending the length of said fabric; each of said strands having at least a first circumferential cross sectional area throughout its length, being joined to a plurality of transverse strands, and adapted to be cut and formed into a plurality of reinforcing cages for use in reinforcing concrete pipe, the improvement comprising, in combination:

visible indicator means at spaced intervals, separating and facilitating cutting of said fabric into a plurality of sets of transverse strands, each set of transverse strands corresponding in length to the circumference plus desired overhang of a particular reinforcing cage to be formed;

reinforcing means as a part of said fabric; said reinforcing means being positioned only at spaced preselected portions of each said set of transverse strands, and terminating along the length of said fabric at each side of said preselected portions such that said reinforcing means are spaced from one another along the length of said fabric and increase the strength and concrete pipe reinforcing capability of the wire fabric by increasing the circumferential cross sectional area of said wire fabric only at said preselected portions; said preselected portions being located at the areas of maximum stress of the concrete pipe to be reinforced by said fabric;

said reinforcing means comprising said circumferential defining line strands having a greater diameter in said preselected portions of said fabric than in the remaining portions of said fabric.

4,358,079

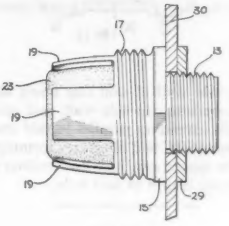
MOISTURE RESISTANT CLAMP FOR PORTABLE CABLES

John N. Navarro, Pasadena, Calif., assignor to Pass and Seymour, Inc., Syracuse, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,535

Int. Cl.³ F16L *5/00*

U.S. Cl. 248—56 **7 Claims**



1. A cable securing device comprising:

(a) a generally tubularly shaped body portion;

(b) a first plurality of axial projections disposed at one end of said body portion;

(c) a second plurality of axial projections disposed adjacent said first plurality of axial projections, said second plurality of axial projections defining an inner surface of said tubularly shaped body portion at said one end of said body portion;

(d) a generally tubularly shaped elastomeric member disposed intermediate said first and second plurality of axial projections;

(e) means for securing said tubularly shaped body portion to a wall;

(f) means for forcing said first plurality of axial projections against said elastomeric member, said elastomeric member against said second plurality of axial projections, and said second plurality of axial projections against a sheath of a cable disposed adjacent said inner surface;

whereby said body portion is secured to said wall and a cable is secured to said body portion, and a fluid resistant seal is formed between said cable and said cable securing device.

4,358,080

FASTENER CLIP FOR DETACHABLY SECURING FUNCTIONAL COMPONENTS TO THREADED PINS FIXED TO A SUPPORT PLATE

Gunter Wolker, Lörrach, Fed. Rep. of Germany, assignor to A. Raymond, Lörrach, Fed. Rep. of Germany

Filed Oct. 30, 1980, Ser. No. 202,425

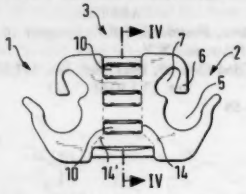
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944748

Int. Cl.³ F16L *3/22*

U.S. Cl. 248—68 R **4 Claims**

1. In a one-piece fastener clip of the type constructed of hard-elastic plastic and operable to detachably secure functional components to a support plate through a threaded pin rigidly joined to said plate, said clip including holding members formed by elastic spring arms extending laterally to opposite sides of said clip and forming parallel channels adapted to receive and retain the functional components, said clip being formed with a fastening hole between said channels having an inside diameter slightly less than the outside diameter of the threaded pin which is adapted to be driven into the fastening

hole; the improvement wherein said fastening hole is interrupted by a plurality of apertures extending through opposite side walls of said clip between said channels and to said fastening hole, said apertures having a width substantially equal to the diameter of said fastening hole, said apertures at each side wall of said clip being arranged one above the other and the



apertures at one side wall of said clip being alternate to the apertures at the opposite clip side wall, said apertures having aperture side walls extending parallel to said channels formed by said holding members, said apertures forming a plurality of surfaces which are spaced axially of one another along substantially the entire axial length of said hole.

4,358,081

BUNDLING FASTENER FOR BARS AND WIRES

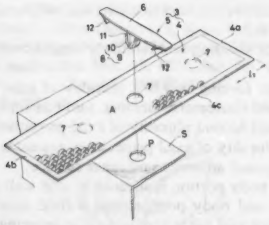
Yoshiaki Notoya, Zushi, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Dec. 8, 1980, Ser. No. 213,804

Claims priority, application Japan, Dec. 14, 1979, 54-172240[U]

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—73 **5 Claims**



1. A bundling device, adapted to be secured to a preapertured support such as a panel or the like from one side thereof and to adjustable retain a plurality of elongated articles such as wires or bars comprising a bundling member of a predetermined length adapted to encircle and retain said articles in a bundle having at least one aperture therein and a fastener member adapted to be releasably attached to said bundling member and to securely fasten said bundling member to said preapertured support, said bundling member including a strip with oppositely undulating portions whereby when the opposite ends of said strip are superimposed and pressed together the undulating portions register and are secured together, said fastener including a head portion with a length dimension greater than the width dimension of said strip and a resilient engaging member adapted to extend through said at least one aperture and the aperture in said preapertured support to secure said bundling member relative to said support, said head portion having a plurality of resilient wings extending angularly therefrom adapted to engage the marginal edges of said strip and retain the fastener relative thereto, said resilient engaging member including a shank portion extending from the same side of said head portion as said resilient wings and a pair of resilient members integrally formed with said shank portion extending from the distal end of said shank towards said head portion adapted to engage the backside of said preapertured support, wherein said plurality of resilient wings are further adapted to bias the head portion away from said preapertured support to thereby maintain said pair of resilient members in engagement with the backside of the preapertured support, whereby said bundling device may be secured positively to supports of varying thicknesses.

4,358,082

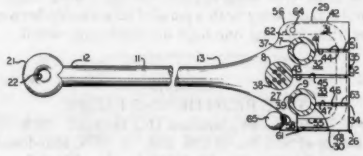
SHOCK ABSORBENT SUPPORT FOR AN ELONGATE MEMBER

James Reeves, 1924 Linn St., North Kansas City, Mo. 64116

Filed Jan. 19, 1981, Ser. No. 226,233

Int. Cl.³ B05B *15/06*

U.S. Cl. 248—75 **11 Claims**



1. A shock absorbent support for an elongate member comprising:

(a) a shank of resilient, stretchable elastomeric material having opposite first and second ends;

(b) attachment means at said first end adapted for attaching said shank to a support structure;

(c) a body member comprising resilient, elastomeric material and being integrally connected to said shank second end and formed as one piece with said shank; said body member including:

(1) a pair of opposite sidewalls;

(2) an endwall positioned opposite said shank second end;

(3) a pair of substantially parallel opposite edges extending into said body member and defining a slot terminating therein, said slot opening onto said endwall and having an inner, receptacle portion extending through said body member and sized for snug, gripping engagement with said elongate member;

(4) a pair of integrally connected fingers separated by said slot, said fingers being resiliently partable whereby said slot is widened sufficiently for said elongate member to pass therethrough to said receptacle portion, said resilience of said body member biasing said fingers toward each other whereby said slot is narrowed and said elongate member retained in said receptacle portion;

(d) an elastomeric, longitudinally stretchable strap having a first end portion fixed to said body member at one of said sidewalls in spaced relation from said endwall and a second end portion detachably connectable to said body member at the other of said sidewalls in spaced relation from said endwall, said strap adapted for being stretched across said sidewalls and said endwall whereby said slot is substantially closed with said edges in close-spaced, abutting relation with said strap second end portion connected to said body member; and

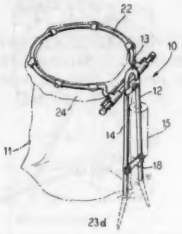
(e) fastening means for detachably fastening said strap second end portion to said body member at said other sidewall in spaced relation from said endwall.

4,358,083

PLASTIC BAG HOLDER

Raymond O. Haubrich, 1089 Forest Ave., DesPlaines, Ill. 60018

Filed Dec. 4, 1980, Ser. No. 212,981
Int. Cl.[3] B65B 67/04
U.S. Cl. 248—545 8 Claims



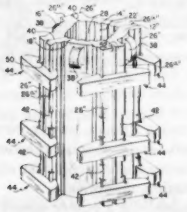
1. A plastic bag holder comprising, an upright support member with a ground engaging portion, a foot rest on said upright support member, an adjustable hoop supported on said upright support adjacent the top thereof, means for changing the diameter of said hoop, said means for changing the diameter of said hoop comprises a transverse bar attached to the upper portion of said upright support member and a pair of T-shaped members slidably mounted on said transverse bar and the opposite ends of said hoop attached to said T-shaped member, and a rod extending parallel of said transverse bar extending through said pair of T-shaped members and with its ends attached to opposite ends of said transverse bar.

4,358,084

SECTIONAL INGOT MOLD

Harold M. Bowman, 18867 N. Valley Dr., Fairview Park, Ohio 44126

Continuation-in-part of Ser. No. 3,093, Jan. 15, 1979, Pat. No. 4,269,385, which is a continuation-in-part of Ser. No. 699,650, Jun. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 600,060, Jul. 29, 1975, abandoned. This application Sep. 24, 1979, Ser. No. 78,447
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.[3] B22D 7/08
U.S. Cl. 249—82 28 Claims



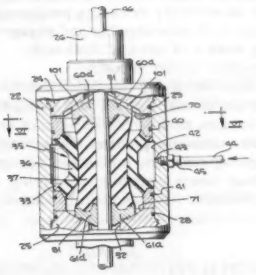
1. A sectional ingot mold comprising a plurality of separable metal side wall sections which when assembled define at least in part a generally vertically oriented mold cavity, means coacting on each of said sections for coupling the mold sections together, said means comprising fastener means coacting between adjacent mold sections for detachably coupling the latter together along generally vertically extending juncture surfaces, said fastener means being capable of holding said mold sections together in relative position to each other and preventing leakage of molten metal from between the mold sections, said fastener means being comprised of a metallic material having a predetermined coefficient of thermal expansion as compared to that of the material of said mold sections, and possessing memory and providing automatic compensation for expansion and retraction of said mold sections relative to one another upon pouring of molten metal into the mold and the resultant heating and subsequent cooling thereof, said fastener means resisting but not preventing separation of said juncture surfaces of each mold section during said heating by initially expanding at a lesser rate as compared to the material of said mold sections but subsequently expanding at a rate resulting in a reduction of stress in said fastener means and returning to substantially their original preheated size condition after the cooling thereof to cause said juncture surfaces to return to generally abutting relation, and including rib means extending generally transverse of the exterior of each mold section for strengthening the wall structure of the mold sections.

4,358,085

KEYING MEANS FOR SEGMENTED END RING BLOWOUT PREVENTER

John Regan, Palos Verdes Peninsula, and Bruce J. Watkins, Palos Verdes Estates, both of Calif., assignors to Hughes Tool Company, Houston, Tex.

Filed Jul. 20, 1981, Ser. No. 285,677
Int. Cl.[3] E21B 33/06
U.S. Cl. 251—1 B 9 Claims



1. An improved blowout preventer apparatus of the type having a radially compressible annular packing mounted within a housing chamber, said housing having axially aligned upper and lower conical bores communicating with an inner bore of said annular packing, said packing axially expanding toward said upper and lower bores upon said radial compression, a plurality of rigid means, attached to the ends of said packing and individually movable axially outwardly and radially inwardly in contact with said upper and lower bores, for controlling said packing axial expansion, wherein the improvement comprises:

keying means cooperating with said rigid means and said conical bores for guiding said sector-wise movement of said rigid means in contact with said conical bores over substantially their entire travel relative to said bores in individually separate and predetermined radial paths toward a common radial position independent of the uniformity of said packing radial compression.

4,358,086

BUTTERFLY VALVE

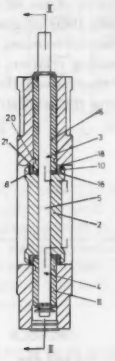
Eduard Hiltebrand, Schaffhausen, Switzerland, assignor to George Fischer Ltd., Switzerland

Filed Oct. 8, 1980, Ser. No. 195,052

Claims priority, application Switzerland, Oct. 9, 1979, 9080/79

Int. Cl.³ F16K *1/22*

U.S. Cl. 251—306 **6 Claims**



1. A butterfly valve apparatus of the type having a pivotable valve member supported in a housing by the ends of a continuous diametral shaft and a one-piece gasket having three ring portions including a first ring portion extending around the periphery of the valve member and second and third ring portions concentrically surrounding the shaft ends, the improvement wherein

said shaft ends include means defining surfaces facing said valve member, at least one of said means and said valve member being slideably mounted on said shaft, and wherein each of said second and third ring portions includes an inwardly extending preformed flange disposed between said valve member and engaged by the adjacent facing surface of one said shaft ends,

said apparatus further including

spring means for urging said flanges and said facing surfaces into abutting relationships, said spring means including

spring elements mounted on one end of said shaft, and

means for exerting a predetermined compressive force on said spring elements, said means for exerting including abutment means engaging said spring means on a side thereof remote from said valve member.

4,358,087

LIMIT SWITCH TRIPPING MECHANISM FOR LIFTING JACKS

Sylvan H. Sime, Walters, Minn., assignor to Simes, Inc., Walters, Minn.

Division of Ser. No. 75,652, Sep. 14, 1979, Pat. No. 4,277,656. This application Nov. 6, 1980, Ser. No. 204,507

Int. Cl.³ B66F *1/00*

U.S. Cl. 254—1 **4 Claims**

1. A lift jack comprising:

a base;

an upstanding outer member rigidly connected to the base;

an upstanding inner member movable coaxially within the outer member;

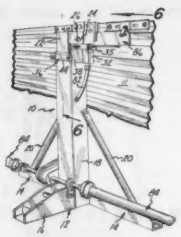
a first stop on the inner member;

mounting means fixedly attached to the outer member;

limit switch means mounted in a fixed position to the stationary member and having an actuating arm with a normal position and a first position on one side of the normal position;

guide means having a stop engaging member for engaging the first stop and an arm guiding portion for guiding the actuating arm;

pivotal connecting means pivotally connecting the guide means to the mounting means and allowing the guide means to pivot at a point between the stop means and the



guiding portion when the stop engaging member engages the first stop so that the guiding portion guides the actuating arm to a first position which changes state of the limit switch means; and

spring bias means for biasing the guide means to hold the actuating arm in a normal position.

4,358,088

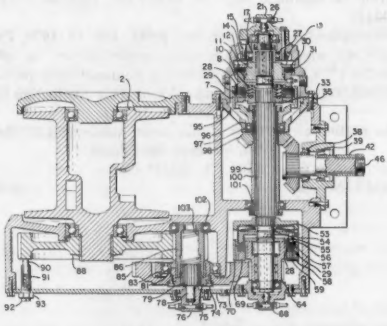
WINCH DRIVE AND BRAKING MECHANISM

Lawrence A. House, Maple Ridge; Vladimir Kumpa, North Vancouver, and John E. Magnuson, Surrey, all of Canada, assignors to PACCAR of Canada Ltd., Quebec, Canada

Filed Oct. 14, 1980, Ser. No. 196,462

Int. Cl.³ B66D *1/14*

U.S. Cl. 254—349 **11 Claims**



10. A winch having a drum, power means for driving said drum, a clutch, brake and free-spool release, and control means for remotely operating said clutch, brake and free-spool release at an operator's station, comprising:

a drive train connecting a power supply to the drum,

a remotely controlled clutch for disconnecting the power supply,

said drive train including an automatic one-way clutch for allowing rotation of the drive train in a hoist direction but locking the drive train against rotation in the reverse lower direction,

a brake in said drive train, said brake being an integral part of said drive train for transmitting power from said supply to said drum, said brake being located in an upper stage of said drive train for providing downstream drag on said drum when said brake is decoupled, means for releasing said brake to permit movement of the drive train down-

stream of the brake and thus lowering rotational movement of the drum,

a free-spool decoupling device located in the drive train close to said drum and downstream of said brake for releasing said drum for free rotation, and

manually operated control means for actuating said clutch, brake and free-spool decoupling means.

4,358,089

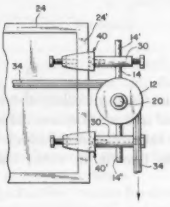
WIRE GUIDING DEVICE

Dale F. Metcalf, 657 Frederick St., Lancaster, Ohio 43130

Filed Nov. 17, 1980, Ser. No. 207,764

Int. Cl.³ B66D *3/04*

U.S. Cl. 254—415 **2 Claims**



1. Wire pulling device comprising, in combination, a pulley wheel; means for rotatively mounting said pulley wheel for free rotation about its axis; a tie rod mounting thereon said means for rotatively mounting said pulley wheel; means for slidingly and fixedly mounting said means for rotatively mounting said pulley wheel to said tie rod; a first clamp means having an opening formed therethrough for receiving therethrough said tie rod, said first clamp means having means for fixedly mounting said tie rod; and means for mounting said first clamp means to a fixed frame, said first clamp means comprising a pair of clamping jaws, one of which has a threaded opening formed therethrough, and a mounting bolt received through said threaded opening of said one clamping jaw, said pair of jaws sandwiching therebetween a portion of said means for mounting said first clamp means to the fixed frame, whereby wire pulled from a source through said means for mounting said first clamp is directed around said pulley wheel to prevent damage to the wire, wherein said means for rotatively mounting said pulley wheel comprises an axle having a threaded end portion and said means for slidingly and fixedly mounting said means for rotatively mounting said pulley wheel comprises a threaded sleeve having a transverse passageway formed therein for receiving therethrough said tie rod and a threaded opening perpendicular to said transverse passageway and a threaded bolt for mating engagement with said threaded opening at one end thereof, said axle and said threaded bolt being matingly received at opposite ends in said threaded opening for abutting against said tie rod to fix the position of said pulley wheel.

4,358,090

SOUND BARRIER FOR HIGHWAY AND OTHER TRAFFIC

Ernest Glaesener, Luxembourg, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Jan. 22, 1980, Ser. No. 114,330

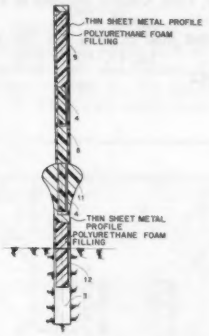
Claims priority, application Luxembourg, Jan. 23, 1979, 80815

Int. Cl.³ E01F *15/00;* **B64F** *1/26*

U.S. Cl. 256—13.1 **16 Claims**

1. A barrier assembly adapted to be disposed along a traffic lane comprising:

a lower road-barrier portion disposed along the ground along said lane and engageable with a vehicle to limit the tendency of said vehicle to leave said lane, said road-barrier portion being formed along at least three sides as a sheet-metal profile and being filled with a foamed synthetic resin, said road-barrier portion extending to the ground and having a bottom edge lying longitudinally therealong and an upper edge, said road-barrier portion being of greater width at an upper one of said edges than at the bottom edge and progressively widening smoothly from said bottom edge toward said upper edge, said road-barrier portion being symmetrical to a vertical longitudinal median plane therethrough;



post means for anchoring said barrier portion to the ground, said post means consisting of posts completely concealed in said road-barrier portion and in the ground; and

a sound-barrier portion at least as high as said road-barrier portion and surmounting said road-barrier portion while being connected thereto, said sound-barrier portion consisting of a hollow sheet-metal profile filled with a foamed synthetic resin material, said sound-barrier portion being narrower than said road barrier portion at least in the region of said upper edge.

4,358,091

DEVICE FOR THE REMOVAL OF WASTE PRODUCTS CREATED DURING THE THERMAL SEPARATION OF MATERIAL

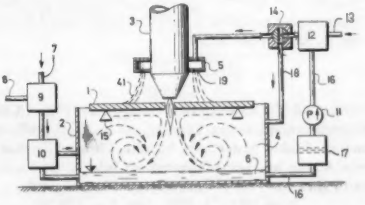
Milan Talanda, Libina, Czechoslovakia, assignor to Vitkovice, Unicovske strojirny, koncernovy podnik, Unicov, Czechoslovakia

Filed Jun. 30, 1981, Ser. No. 279,060

Claims priority, application Czechoslovakia, Jun. 30, 1980, 4636-80

Int. Cl.³ B23K *7/08*

U.S. Cl. 266—49 **9 Claims**



1. A device for the removal of waste products created during the thermal separation of material comprising a reservoir having a working grate in its upper portion to hold the material to be separated, an inlet in the lower portion of the reservoir

connected to a means for supplying foam, an outlet in the lower portion of the reservoir which is connected to a terminal having an opening which attaches to a cutting torch, whereby foam flows from the reservoir to the terminal and forms a protective mantle around the torch.

4,358,092

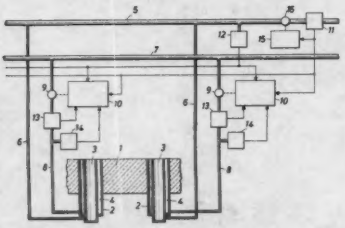
EXOTHERMIC REACTION, SYSTEM FOR SUPPLYING A REACTANT GAS AND A SHIELDING FLUID TO A REACTOR, AND CONTROL SIGNAL GENERATING CIRCUIT FOR USE IN SAID SYSTEM

Julius Grabner, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 13, 1980, Ser. No. 177,794

Int. Cl.³ C21C *5/30*

U.S. Cl. 266—82 **7 Claims**



1. A system for supplying a reactant gas and a shielding fluid to a reactor having a refractory lining and a plurality of annular nozzles mounted in said lining, each of said nozzles having an inner reactant gas passage and an annular shielding fluid passage surrounding said reactant gas passage, which system comprises

a reactant gas manifold and a plurality of reactant gas feed conduits connected to said reactant gas manifold and adapted to be connected to respective ones of said reactant gas passages,

a shielding fluid manifold and a plurality of shielding fluid feed conduits connected to said shielding fluid manifold and adapted to be connected to respective ones of said shielding fluid passages,

a reactant gas pressure sensor for sensing the pressure in said reactant gas manifold, and

a control system for controlling the fluid flow in said shielding fluid feed conduits, said control system comprising

pressure control means responsive to the gas pressure in the reactant gas manifold for preventing a pressure rise in each one of said shielding fluid feed conduits above an upper limit, and

flow rate control means for maintaining a predetermined ratio between the flow rate in said shielding fluid feed conduit and the flow rate in said reactant gas manifold as long as said pressure in said shielding fluid feed conduit is below said upper limit.

4,358,093

STEEL STRIP CONTINUOUS ANNEALING FURNACE

Yuji Shimoyama; Fumiya Yanagishima, both of Ichihara; Hideo Sunami, Chiba; Munetoshi Suzuki, Chiba; Hiromasa Yamamoto, Chiba, and Gunji Sakamoto, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

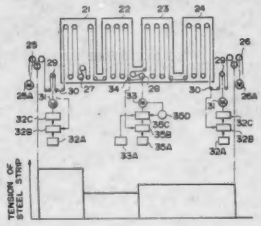
Filed Oct. 21, 1980, Ser. No. 199,200

Claims priority, application Japan, Oct. 31, 1979, 54-141506

Int. Cl.³ C21D *9/54*

U.S. Cl. 266—103 **5 Claims**

1. A steel strip continuous annealing furnace comprising a heating zone, a soaking zone or a heating-soaking zone and cooling zone, wherein a plurality of sets of bridle rolls engaging with a steel strip to isolate tension of the steel strip in the longitudinal direction of the steel strip are provided at the front outer side and at the back outer side of the furnace and within the furnace so as to define a plurality of tension control blocks between each of adjacent said bridle rolls, and a plurality of tension control mechanisms are provided for each of said



tension control blocks for controlling the tension of the steel strip isolated within of said tension control blocks whereby the tension within each tension control block can be controlled independently of the tension in other said tension control blocks.

4,358,094

FURNACE SYSTEM FOR SMELTING ORE CONCENTRATE AND THE LIKE

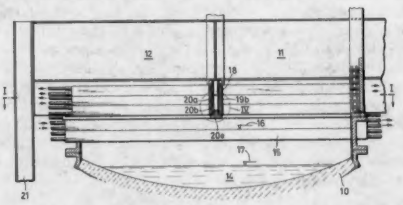
Friedrich Megerle, Cologne, and Heinz Cordewener, Troisdorf, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 7, 1980, Ser. No. 194,903

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942121

Int. Cl.³ C21B *7/10*

U.S. Cl. 266—190 **10 Claims**



1. In a furnace system for smelting ore concentrate and the like including a furnace housing having wall means dividing the same into a smelting shaft, an exhaust gas shaft and a settling hearth, said settling hearth and said smelting shaft being separated by a partition wall preventing gaseous interaction therebetween but permitting liquid flow therebetween, the improvement which comprises:

as said partition wall:

a supporting frame comprising a hollow box girder, and

a plurality of cooling elements at least in the areas of highest thermal stress releasably secured to both sides of said hollow box girder, and

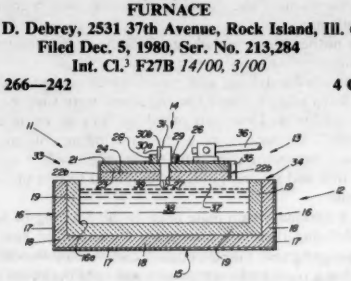
means for circulating a coolant through said cooling elements.

4,358,095

FURNACE

Andrew D. Debrey, 2531 37th Avenue, Rock Island, Ill. 61201

Filed Dec. 5, 1980, Ser. No. 213,284
Int. Cl.³ F27B *14/00, 3/00*
U.S. Cl. 266—242 **4 Claims**



1. A furnace for operation upon baths of light metals, nonferrous metals and alloys thereof, said furnace comprising:

container means for holding the metal bath; roof means attached to said container means, and

cooperating with said container means to form a shallow heating chamber between the surface of the bath and the underside of said roof means;

shallow heating chamber means formed between the surface of the bath and underside of said roof means by cooperation of said container and roof means; and

fuel-burner means, carried by the opening through roof means, for directing a flame downwardly to impinge against the metal bath surface, and

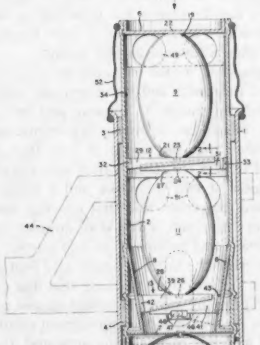
said heating chamber shallow dimension is from 2.5 to 5.0 centimeters, between the surface of the bath and said roof means underside.

4,358,096

VEHICLE SUSPENSION SYSTEM

H. Neil Paton, 2521 West Montlake Place East; John B. Skilling, 539 McGilvra Blvd. East, both of Seattle, Wash. 98112; Jeffrey P. Sandys, 138 N. 78th St., and E. Frederick Gylland, Jr., 6517 Fremont Ave. North, both of Seattle, Wash. 98103

Continuation of Ser. No. 16,533, Mar. 11, 1979, abandoned. This application Mar. 10, 1981, Ser. No. 242,511
Int. Cl.³ F16F *3/00*
U.S. Cl. 267—9 C **16 Claims**



1. A spring suspension system comprising:

load bearing spring means;

means for retaining said spring means and receiving compressive loads therefrom;

spring support means for receiving compressive loads to be applied to said system; and

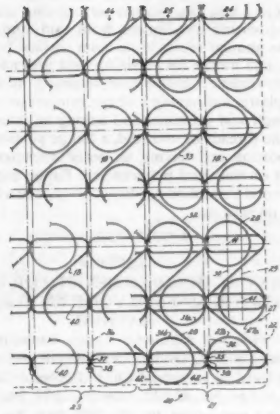
force responsive frictional damping means acting between said spring means and said spring support means for damping compressive and expansive movement of the spring means, said damping means being operatively associated with said spring retaining means for receiving compressive loads from said support means and applying a first component of load bearing force therefrom to said spring means and a second force component thereof for forcing said damping means into damping engagement with said retaining means.

4,358,097

SPRING ASSEMBLY

Henry Zapletal, and Thomas J. Wells, both of Carthage, Mo., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Dec. 4, 1980, Ser. No. 212,818
Int. Cl.³ F16F *3/02;* **A47C** *23/04*
U.S. Cl. 267—101 **12 Claims**



1. A spring assembly comprising:

a plurality of rows of coils, each of said rows being formed from a single continuous piece of wire and each of said rows containing a plurality of coils interconnected by Z-shaped interconnecting segments, alternate ones of said Z-shaped interconnecting segments being disposed in the planes of the upper and lower surfaces of said spring assembly, portions of said Z-shaped interconnecting segments extending beyond the periphery of said coils, the axes of said coils being disposed perpendicular to the upper and lower surfaces of said spring assembly,

sections of each of said Z-shaped interconnecting segments of each row being overlapped relative to Z-shaped interconnecting segments of an adjacent row, said overlapped sections being located on opposite sides of said coils,

helical spring means extending parallel to said rows for the length of said rows, said helical spring means being wound through said overlapped sections of said Z-shaped interconnecting segments so as to secure said rows of coils in an assembled relation, and

said overlapped sections of said Z-shaped interconnecting segments being radiused, the center of the radii of said overlapped sections being located in diametral plane of said coils, and the center of the radii of the overlapped sections on opposite sides of each of said coils being located in the same diametral plane so that compression of said assembled coils does not cause the axes of said coils to be moved laterally or the coils to be twisted when fully compressed.

4,358,098

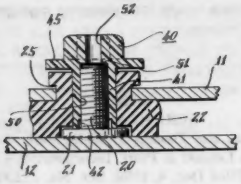
MOUNTING NUT

Anthony Ceseri, Staten Island, N.Y., assignor to National Union Electric Corporation, Greenwich, Conn.

Filed Nov. 17, 1980, Ser. No. 207,238

Int. Cl.[3] F16F 7/00

U.S. Cl. 267—141.5 14 Claims



1. In a mounting assembly including a threaded stud mounted to a base, a grommet surrounding said stud for resiliently supporting an element from said stud, said grommet having an annular recess in its outer surface for receiving said element, and means for retaining said grommet on said stud, the improvement wherein said retaining means comprises a unitary plastic nut having a sleeve portion on one end extending through said grommet and having an internal surface engaging the threads of said stud, a flange portion adjoining said sleeve portion and having an outer diameter to retain said grommet on said stud between said flange and said base, and the other end thereof being shaped to engage a tool for rotating said nut on said stud.

4,358,099

STATOR CORE HOLDING DEVICE FOR FABRICATING A STATOR ASSEMBLY FOR AN ELECTRICAL MACHINE

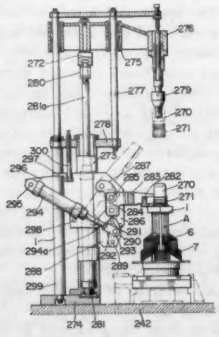
Tokuhito Hamane, Hirakata; Toshio Kinoshita, Katano, and Masafumi Kihira, Osaka, all of Japan, assignors to Matsushita Electrical Industrial Co. Ltd., Osaka, Japan

Division of Ser. No. 43,027, May 29, 1979, Pat. No. 4,296,543. This application Jul. 10, 1981, Ser. No. 281,922

Claims priority, application Japan, May 30, 1978, 53-65209; Canada, May 22, 1979, 328011; Fed. Rep. of Germany, May 29, 1979, 2921794; Philippines, May 29, 1979, 22578; United Kingdom, May 29, 1979, 7918569

Int. Cl.[3] H02K 15/06

U.S. Cl. 269—93 4 Claims



1. A device for holding a stator of an electrical machine having an axis about which an associated rotor of the electrical machine is rotated, said holding device being used in a drawing-in device arranged to insert winding coils from a transfer tool into the stator core and being arranged to hold the stator core when the winding coils are inserted into the stator core in one operation of the drawing-in device, said holding device comprising:

i. a pusher block including a holding-down plate integrally incorporated therewith;

ii. means for driving said pusher block so that said holding-down plate is moved to the stator core supported by the transfer tool carrying winding coils to be inserted and holds the stator core when the winding coils are inserted into the stator core from the transfer tool;

iii. first and second guide rollers fitted to said pusher block; and

iv. a stationary cam plate fixed to the drawing-in device and defining therein a cam groove with which said first and second guide rollers cooperate so as to move said holding-down plate to the stator core and hold the stator core with a predetermined force parallel to said axis.

4,358,100

APPARATUS FOR SINGULARIZING STACKED SHEETS

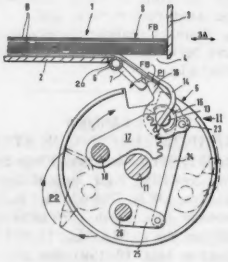
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Sep. 30, 1980, Ser. No. 192,445

Claims priority, application Switzerland, Oct. 17, 1979, 9325/79

Int. Cl.[3] B65H 5/08

U.S. Cl. 271—11 15 Claims



1. Apparatus for feeding sheets comprising:

(a) a magazine for confining a stack of sheets;

(b) rotary carrier means for transferring sheets from said magazine to a location spaced from the same;

(c) drive means for said carrier means;

(d) first gripping means mounted on said carrier means for rotation therewith and for movement relative thereto;

(e) first moving means for moving said first gripping means relative to said carrier means in response to rotation of the latter such that the speed of said first gripping means relative to said magazine varies between a lower value in the region of said magazine and a higher value remote from said magazine, said first moving means including a stationary first cam, a first shaft coupled to said first gripping means and mounted on said carrier means so as to project from the latter towards said first cam, and a first follower on said shaft tracking said first cam;

(f) second gripping means mounted on said carrier means for rotation therewith and for movement relative thereto, said second gripping means being arranged to cooperate with said first gripping means to grip a sheet during transfer of the same from said magazine to said location;

(g) second moving means for moving said second gripping means relative to said carrier means in response to rotation of the latter such that the speed of said second gripping means relative to said magazine varies between a lower value in the region of said magazine and a higher value remote from said magazine, said second moving means including a stationary second cam, a second shaft coupled

to said second gripping means and mounted on said carrier means so as to project from the latter towards said second cam, and a second follower on said second shaft tracking said second cam, said first and second moving means also being arranged to move said first and second gripping means together in the region of said magazine so as to grip a sheet to be transferred and to move said first and second gripping means apart in the region of said location so as to release the sheet; and

(h) introducing means for introducing sheets from said magazine to said first and second gripping means.

4,358,101

SHEET FEEDER DEVICE FOR A PRINTING MACHINE

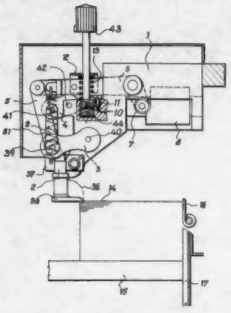
Jaroslav Janecek, Brno; Jaroslav Jiruse, Blansko, and Josef Rozsypal, Adamov, all of Czechoslovakia, assignors to Adamovske strojirny, narodni podnik, Prague, Czechoslovakia

Continuation of Ser. No. 102,837, Dec. 12, 1979, abandoned. This application May 20, 1981, Ser. No. 265,406

Claims priority, application Czechoslovakia, Dec. 28, 1978, 9030-78

Int. Cl.³ B65H *1/18, 3/54*

U.S. Cl. 271—12 **3 Claims**



1. A sheet feeder device for offset printing machines for feeding paper sheets from a pile to a transporter device which transports the sheets in overlapped arrangement to a printing mechanism comprising a feeder head for feeding the paper to the transport device and a vertically positioned straightening element for maintaining the sheets in alignment, said feeder head having an adjustable pressure feeler element in contact with the top paper sheet of said pile to determine the position of the top of the pile and prevent movement of the top sheet as a sheet is moved to the transporter device, said feeler element being connected to a swing lever, said swing lever being connected to a pull rod which, in turn, is connected to one end of a first lever arm, said first lever arm being connected to a second lever arm having, at its distal end, a following roller which bears on a drum-shaped cam, a regulating screw mounted in said feeder head for adjusting the pressure of said feeler having a pressure spring coaxial with said screw interposed between a shoulder at the lower end of the screw and a rest on the upper surface of said first lever arm, whereby the pressure of said feeler element can be adjusted; and wherein said straightening element abuts the sides of the pile of paper to maintain the sheets in said pile in alignment and comprises vertically arranged hollow tubes having mounted adjacent to their top end a turnably mounted eccentric body having a lever for turning the eccentric and stop means for limiting the travel of the eccentric and a holder for paper guide means, the eccentric being turnably arranged in a block piece to which is attached a connecting element within said hollow tube, said connecting element having attached to its lower end clamping means to engage said machine to lock the straightening elements into position after adjustment.

4,358,102

COPY PAPER FEEDING CASSETTE

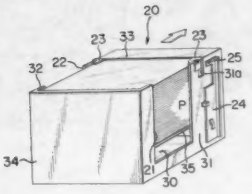
Tatsuji Hoshizaki, and Yutaka Seto, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 28, 1980, Ser. No. 154,070

Claims priority, application Japan, May 31, 1979, 54-72367[U]; May 31, 1979, 54-72368[U]

Int. Cl.³ B65H *1/04, 3/56*

U.S. Cl. 271—164 **7 Claims**



1. In a cassette for containing a stack of copy sheets and insertable into a reproducing machine for individual successive feeding to the machine of the uppermost sheet in the stack,

a pair of opposed side walls of the cassette, each said side wall including an open gate through which copy sheets being loaded into or removed from the cassette can be grasped,

a pair of reinforcing members, each carrying an elastic member thereon for pressure contact with at least the uppermost copy sheet in the stack when the cassette is fully inserted into the reproducing machine,

means pivotally mounting each said reinforcing member to a respective one of said side walls proximate the front end of the cassette for pivotal movement about said means between a first position in which each said reinforcing member is disposed at a position removed from the gate of its respective side wall, and a second position in which each said reinforcing member substantially horizontally spans the gate of its respective side wall to reinforce said respective side wall by bridging said gate thereof and in which each said elastic member is thereby maintained in pressure contact through said gate with at least the uppermost copy sheet in the stack contained in the cassette, and

guide means on each said reinforcing member for cooperative engagement with a portion of the reproducing machine to cause said reinforcing member to be automatically moved from said first to said second position thereof as the cassette is inserted fully into said reproducing machine from a location exterior thereto,

whereby said first position of the reinforcing members in the noninserted condition of the cassette enables ready access to sheets contained in or being placed into the cassette through said gates without interference from said reinforcing members, and said automatic pivotal movement of said reinforcing members to said second position as the cassette is inserted into the reproducing machine insures that said side wall reinforcing function of said reinforcing members in spanning said gates, and said disposal of the elastic members in pressure contact with at least the uppermost copy sheet in the stack, will be attained when the cassette is fully inserted into the reproducing machine.

4,358,103
MAGNETIC CARD TRANSPORTING APPARATUS

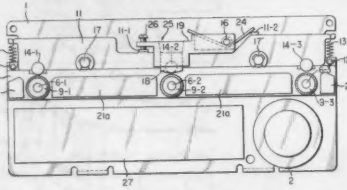
Hiroyuki Koike, Saitama, and Shigehiro Kato, Chichibu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 872,154, Jan. 25, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 98,761

Claims priority, application Japan, Feb. 4, 1977, 52-11281; Feb. 4, 1977, 52-11282; Feb. 4, 1977, 52-11283; Feb. 4, 1977, 52-11284; Feb. 4, 1977, 52-11285; Feb. 4, 1977, 52-11286

Int. Cl.[3] B65H *9/16*

U.S. Cl. 271—248 14 Claims



1. A magnetic card transporting apparatus comprising:

a transport roller for transporting a magnetic card;

means for driving said transport roller;

means for urging the magnetic card to said transport roller;

a base member for supporting said transport roller, said driving means and said urging means;

a card support having a first lateral end cantilevered to said base member and a second lateral end, said first end being at a higher level than said second lateral end, said first lateral end of said card support being adapted to support the card and said second lateral end of said card support being adapted to remain out of contact with the card; and

lateral means, provided adjacent the second lateral end of said card support, for laterally urging the magnetic card toward the base member substantially over the entire length of transportation of the card, said lateral means having a portion, remote from said card support, which is inclined toward said base member to cause the magnetic card to travel on the level of said first end of said card support.

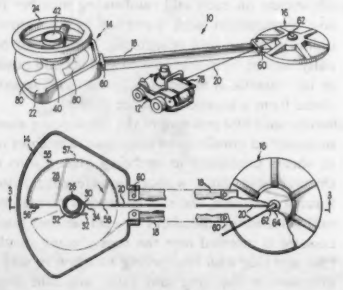
4,358,104
TETHERED TOY VEHICLE CONTROL APPARATUS

Denni F. Rivette, Chicago, and Harry Disko, South Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 24, 1980, Ser. No. 200,159

Int. Cl.[3] A63H *17/38, 30/00*

U.S. Cl. 272—31 R 1 Claim



1. A control apparatus for self-propelled toy vehicles comprising:

a control station;

a remote station;

a connecting housing between said remote station and said control station;

a flexible strand extending from said control station to said remote station through said connecting housing and extending out of said remote station for connection to said toy vehicle; and

said control station including means for selectively adjusting the length of extension of said strand from said remote station, said adjusting means including a rotatable, generally semicircular drum and a steering wheel connected to said drum, said drum connected to one end of said strand, rotation of said steering wheel in one direction causing said strand to be wound onto said drum, pulling said vehicle inwardly toward said remote station, said control station further including stop means for limiting the degree of rotation of the steering wheel in either direction of rotation with said strand completely paid out when said steering wheel is at its limit in the other direction.

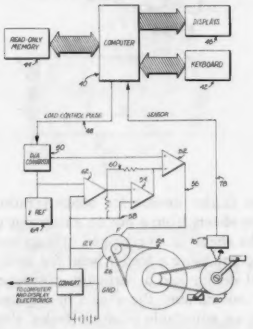
4,358,105
PROGRAMMED EXERCISER APPARATUS AND METHOD

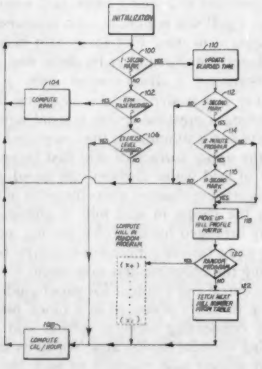
James S. Sweeney, Jr., Laguna Beach, Calif., assignor to Lifecycle, Inc., Irvine, Calif.

Filed Aug. 21, 1980, Ser. No. 180,109

Int. Cl.[3] A63B *21/24, 23/04*

U.S. Cl. 272—73 20 Claims





1. In an exerciser apparatus, which provides variable loads

to vary the energy expenditure demanded from the operator during an exercise program, the combination comprising:

means for generating a random number which is not predictable by the operator;

means for converting said random number into a corresponding value representing an energy expenditure level; and

means for developing a load resisting the operator's energy which corresponds to said energy expenditure level.

2. An exercise control method, which provides variable loads to vary the energy expenditure demanded from the operator during an exercise program, comprising:

generating a random number which is not predictable by the operator;

converting said random number into a corresponding value representing an energy expenditure level; and

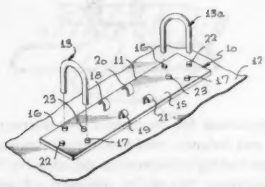
developing a load resisting the operator's energy which corresponds to said energy expenditure level.

4,358,106

EXERCISING STAND

Alan R. Shadford, 68620½ Broadway, Cathedral City, Calif. 92234

Filed Jan. 16, 1981, Ser. No. 225,675
Int. Cl.³ A63B *23/02*
U.S. Cl. 272—93 **3 Claims**



1. An exercising device for developing the upper torso and arms of the user by performing push-up procedures, the combination comprising:

an elongated base having opposite ends separated by a mid-section and parallel opposite side edges interconnecting said opposite ends;

a plurality of four pegs secured to each of said base opposite ends separated by said base mid-section;

a pair of hand grips detachably carried on selected pairs of said plurality of four pegs associated with each of said base opposite ends;

each of said hand grips being of substantially U-shaped configuration having opposite ends terminating in an open ended bore for insertably receiving said selected pairs of said plurality of four pegs;

each of said hand grips is a hollow tube bent over upon itself to define said U-shaped configuration and said hand grip having a length longer in distance than its width;

said base mid-section constitutes a storage area for said hand grips when removed from said selected pair of pegs;

clip means secured to said mid-section releasably engaging with said hand grips for retaining said hand grips on said base for storage; and

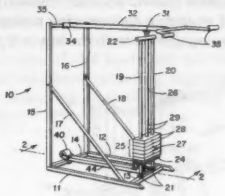
said plurality of four pegs are arranged so that said selected pairs of said plurality of four pegs are selected from a pair of pegs which are on a plane parallel to said opposite base side edges, normal to said opposite base side edges or angularly disposed with respect to said opposite base side edges.

4,358,107

WEIGHT LIFTING MACHINE

George P. Nissen, c/o Nissen Corporation, 930 - 27th Ave. SW., Cedar Rapids, Iowa 52406

Filed Feb. 19, 1980, Ser. No. 122,373
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—118 **3 Claims**



1. In a weight lifting machine having an upright frame including a pair of elongated generally upright laterally spaced weight guide members pivoted at their lower ends to the frame, a stack of discrete graduated weights supported on the guide members adjacent their lower ends, the weight guide members extending through the stack of weights at horizontally spaced locations thereon, each of the weights being slidable on the guide members, an elongated generally upright selector member, the lower end portion of the selector member extending slidably through the weight stack at a location between the guide members therethrough, the selector member including a plurality of transverse apertures spaced longitudinally thereof at locations corresponding to locations between adjacent ones of the weights, means insertable between an adjacent pair of the weights and through the selector member aperture therebetween in order to provide a selected one or ones of the weights, the selector member and the weights so selected being liftable relative to the guide members and the non-selected weights of the stack, and a generally horizontal lifting member having an end pivoted to the frame and having means at another end for lifting movement of the lifting member by the limb or limbs of a trainee, the lifting member being pivoted intermediate its ends to the upper end of the selector member, whereby lifting movement of the lifting member causes pivoting movement of the guide members and the weight stack about said guide member lower end pivots, the improvement comprising: at least one spring assembly carried by the frame including at least one unwindable and self-winding spring of the non-cumulative forced type having a free end, unwinding of the spring by its free end being resisted by a pre-determined constant tension throughout substantially all said unwinding, the spring being generally horizontally offset from the selector member and weight stack, a flexible member connected at one end to said spring end, the flexible member passing over pulley means disposed beneath the lower end of the selector member and having its other end releasably connected to the lower end of the selector member effective to unwind the spring against said tension upon lifting of the selector member and said selected weights by the lifting member as aforesaid.

4,358,108

APPARATUS FOR EXERCISING THE HAMSTRING OR QUADRICEP MUSCLE GROUPS

Harvey C. Voris, Rancho Palos Verdes, Calif., assignor to Paramount Health Equipment Corporation, Los Angeles, Calif.

Filed Jun. 8, 1981, Ser. No. 271,480
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—118 **17 Claims**

1. Apparatus for exercising primarily either the hamstring or quadricep muscle groups of a user, comprising:

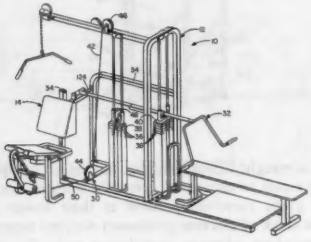
a frame;

means for locating at least one knee of a user relative to said frame, said locating means being mounted to said frame

for rotation from a first condition for supporting the posterior portion of the associated thigh of the user in a sitting position to a second condition for bracing the anterior portion of the thigh in a standing position; and

means for engaging the lower leg of the user below the knee and resisting pivotal movement of the lower leg thereabout in a direction outwardly and upwardly relative to said frame, said engaging and resisting means including:

at least one arm engageable with the lower leg of the user; and



means for suspending said arm for pivotal movement about a machine axis substantially parallel to the joint axis of the knee, said suspending means including means for adjusting the height of said machine axis relative to said frame;

whereby said machine axis can be adjusted to substantially the height of the joint axis of the user's knee when the user is in either said sitting or said standing position.

4,358,109

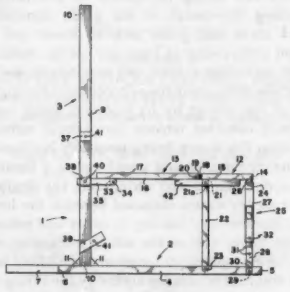
ADJUSTABLE EXERCISE BENCH

James M. Schrems, 8650 Ederer Rd., Saginaw, Mich. 48603

Filed Nov. 10, 1980, Ser. No. 205,624

Int. Cl.[3] A63B *23/02*

U.S. Cl. 272—144 **8 Claims**



1. An exercise device comprising a frame having a base and an upright fixed to said base and extending upwardly therefrom; a back member; a seat member; means pivotally connecting one end of said back member to one end of said seat member for relative angular adjustment of said members; support means pivotally connecting said seat member to said base for supporting said seat at any one of a selected number of different levels above said base; supporting means pivotally connected to said back member at its opposite end; and a plurality of retainer means carried by said upright at vertically spaced levels, any selected one of said retainer means being operable to secure said supporting means to said upright whereby said seat member and said back member may assume any selected one of a number of different angular positions relative to one another.

4,358,110

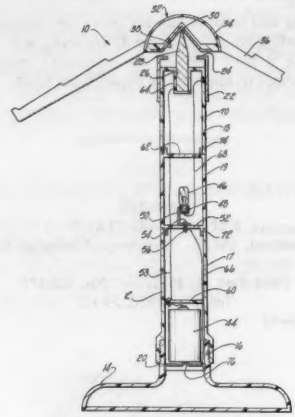
BALANCING GAME APPARATUS

Frank O. Youkstetter, 7328 Creek View, West Bloomfield, Mich. 48033

Filed Oct. 16, 1980, Ser. No. 197,638

Int. Cl.[3] A63F *9/00*

U.S. Cl. 273—1 GC **24 Claims**



1. A game apparatus for recreation and instruction in moments of force and balance, said apparatus comprising:

a support base having a fulcrum at the top;

a balanced element having a plurality of equidistantly spaced, extending arms, said element being balanced on said fulcrum, each of said plurality of arms having a plurality of notches formed therealong, and each of said plurality of arms having a separate indicium;

a plurality of weights to be suspended from said plurality of arms at any of said notches;

means for randomly selecting a plurality of indicia to determine which arms are to suspend said weights;

means for determining the number of said weights to be suspended on said arms; and

means for indicating when said balanced element is imbalanced beyond a predetermined point,

whereby a player may accumulate points for properly positioning a number of weights on said arms according to said weight determining means and said random selecting means thereby learning about balance and moments of force.

4,358,111

PRESSURIZED, NON-REFILLABLE RECREATION BALL INFLATED WITH SULFUR HEXAFLUORIDE

John Papinsick, Summit Hill; John J. Oransky, Lansford, and Shivaji Sircar, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

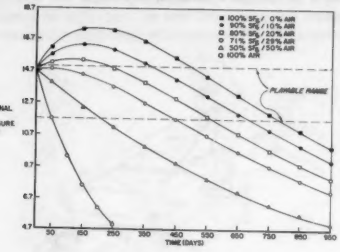
Filed Apr. 2, 1981, Ser. No. 250,505

Int. Cl.[3] A63B *41/00*

U.S. Cl. 273—61 R **6 Claims**

1. A pressurized, non-refillable recreation ball inflated with

a mixture of sulfur hexafluoride and air to maximize shelf life and play characteristic retention wherein the sulfur hexafluoride is present in a range of 65% to 75% by volume of the total gas content of said ball.



4,358,112

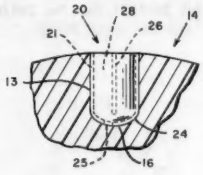
FINGER HOLE INSERT FOR BOWLING BALLS

Andrew J. Straborny, 14 Third Pk., Milford, Conn. 06460

Filed Sep. 4, 1981, Ser. No. 299,272

Int. Cl.³ A63B *37/00*

U.S. Cl. 273—63 A **5 Claims**



1. A ball-gripping element adapted to be secured within the finger bore of a bowling ball in order to provide improved, uniform gripping ability, increased contact between the fingers and the ball and smooth release properties, said element comprising a cup molded of silicone rubber, said cup having a cylindrical outer surface adapted to conform to and be secured within the cylindrical bore of a bowling ball, a base wall having a contoured outer base surface adapted to engage the rounded seat of said bore, a central finger-receiving opening within said cup and a contoured seat at the base of said opening adapted to be engaged by the tip of said finger to limit the extent to which said finger can be inserted, said central opening defining between itself and said outer surface a wall comprising opposed thin side wall sections, a bottom or finger grip section having a flat interior surface adapted to be engaged by the undersurface of the finger and an opposed top or fingernail section having at least one recess or slot in the interior surface thereof to permit the passage of air, whereby said central opening is adapted to receive a portion of the finger of a bowler in contact with the inside surface thereof and to release said finger smoothly during the act of bowling.

4,358,113

HOCKEY STICK

John D. McKinnon, 131 Pueblo Rd., Corona, Calif. 91720; Francis N. Maloney, 4455 Monitor Ct., Riverside, Calif. 92503; John S. Miller, and James R. Miller, both of 3338 W. Castor St., Santa Ana, Calif. 92704

Filed Feb. 12, 1981, Ser. No. 233,921

Int. Cl.³ A63B *59/14*

U.S. Cl. 273—67 A **4 Claims**

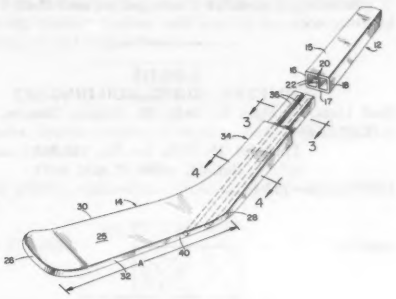
1. An improved hockey stick comprising:

a double-box beam shaft defining an elongated handle having a central strut wall forming contiguous box channels therein;

a fabricated blade having a main blade-body portion and an angularly disposed integral neck portion;

a pair of juxtaposed mainstays extending outwardly from said neck portion and formed as an integral part thereof, each of said mainstays being disposed and secured in said respective box channels of said shaft, whereby said shaft abuts against said neck portion;

a pair of fiberglass rod members encapsulated within said neck portion of said blade and said respective mainstays, said rod members extending angularly upward from the lower contacting edge of said blade into said respective mainstays;



wherein said fabricated blade further comprises:

a core formed from a plastic resin;

a webbed plastic cloth material embedded about the outer surface of said plastic resin core, defining a hard protective skin for said blade;

a plurality of elongated layers of pulltruded unidirectional fiberglass strips laminated within said core and longitudinally disposed along said blade-body portion; and

a plurality of resilient spacer members interposed between said strips to provide space between said strips, allowing said resin core to be received therein and thereby establishing a laminated blade body.

4,358,114

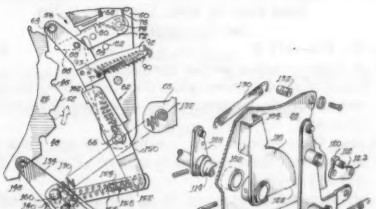
REEL SPIN MECHANISM

Walter M. Burnside, Waukegan, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Mar. 31, 1980, Ser. No. 135,535

Int. Cl.³ A63F *5/04*

U.S. Cl. 273—143 R **20 Claims**



1. Reel spin mechanism for use in an amusement or game device, comprising a reel mounted for rotation;

a circular disc with a plurality of notches located along the circumference thereof attached to said reel, the notches being formed to receive a drive member for imparting spin to the disc and reel;

a shaft mounted for rotation and extending parallel to the axis of the reel;

drive lever means pivotally mounted for independent rotation on said shaft and having a drive member at the distal end thereof for engagement with one of the notches when said drive lever means is pivoted toward the disc;

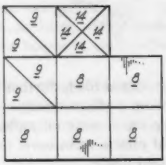
means connected to said shaft for pivoting said drive lever means toward and away from the disc, said pivoting means causing said drive member to fully engage any notch in said reel after pivoting said drive lever means toward the disc at the initiation of play and thereafter effecting a few degrees rotation of the disc and reel in a first direction of rotation; and

means for imparting spin to the disc and reel in a direction opposite said first direction of rotation, said spin means including a member connected to said shaft to rotate therewith.

4,358,115
GEOMETRIC FIGURE BUILDING SET

Rudi Haas, 46 Elgin St., Suite 29, Ottawa, Ontario, Canada (K1P 5K6)

Filed Jul. 15, 1980, Ser. No. 169,203
Int. Cl.[3] A63F *9/10*
U.S. Cl. 273—157 R **2 Claims**



1. A set of generally flat puzzle pieces consisting solely of:

(a) five square shaped pieces of generally identical size, the sides of each piece having a predetermined length;

(b) four first triangular pieces of generally identical size, each of the first triangular pieces having the shape of a right-angled isosceles triangle whose sides are each generally equal in length to said predetermined length;

(c) four second triangular pieces of generally identical size, each of the second triangular pieces having the shape of a right-angled isosceles triangle whose base is of a length generally equal to said predetermined length.

4,358,116
GOLF PRACTICE TARGET FOR CHIPPING AND PUTTING

John W. Florida, 1549 E. Atherton, Box 11, Flint, Mich. 48507

Filed Dec. 10, 1980, Ser. No. 214,705
Int. Cl.[3] A63B *69/36*
U.S. Cl. 273—177 R **8 Claims**

1. A target practice device comprising:

a length of rigid, lightweight, cylindrical tubing of predetermined outside diameter joined at its end to form a closed loop; and

at least three support legs, connected to said loop, each of said at least three legs being formed of a small diameter rod and having:

an offset soil-penetrating prong portion at one end of said leg, said prong portion being of sufficient length to stabilize said closed loop above the ground;

a clearance portion parallel to said prong portion;

a stabilizing portion perpendicular to and connecting said prong portion to said clearance portion so that said stabilizing portion rests along the ground when said prong portion is fully inserted into the ground; and

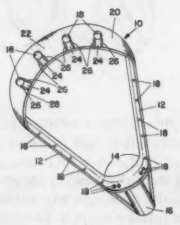
a holding portion adjacent said clearance portion at one end of each leg and formed as a ring with a diameter substantially the same as said predetermined outside diameter so as to substantially encircle and hold said tubing such that the tubing may be rotated therein and held at various rotational positions,

whereby said offset prong portion of each of said at least three support legs may be inserted into the ground to support said closed loop of tubing above the ground.

4,358,117
LACROSSE STICK

Warren D. Deutsch, 33 Mill Dam Rd., Smithtown, N.Y. 11787

Filed Jul. 29, 1981, Ser. No. 288,061
Int. Cl.[3] A63B *59/02*
U.S. Cl. 273—326 **10 Claims**



1. An improved head for a lacrosse stick comprising a generally V-shaped frame having two side walls joined at a juncture and diverging therefrom, a transverse wall joining the ends of said side walls opposite of said juncture and forming a scoop-shaped end of the frame, said frame having a plurality of openings through the side walls and transverse wall to accommodate the attachment of a laced net structure to one side of the frame; wherein the improvement comprises a plurality of grooves along the outer surface of the transverse wall equal in number to the openings through said transverse wall and extending from each opening in the transverse wall to the edge of the frame intended to be provided with the laced net structure, the width of said grooves being substantially equal to the width of the openings through the transverse wall and the depth of said grooves being at least about the thickness of the lacings on the laced net structure.

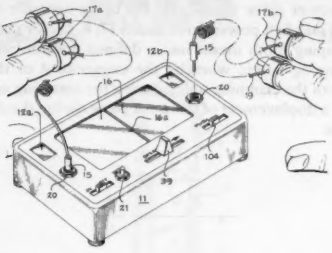
4,358,118
ELECTRONIC GAME USING A PLAYER'S PHYSIOLOGICAL RESPONSES

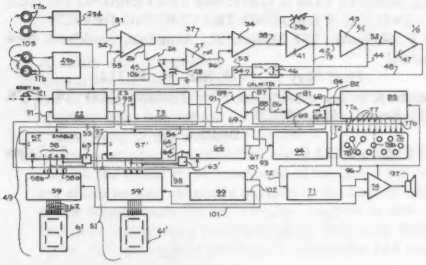
Gary R. Plapp, P.O. Box 572, Redwood Estates, Calif. 95044

Filed Mar. 7, 1980, Ser. No. 128,194
Int. Cl.[3] A63F *9/00*
U.S. Cl. 273—85 G **4 Claims**

1. An electronic game of a type in which players compete comprising a plurality of constant current input means adapted

to be associated with a respective one of a plurality of players for detecting the of the player's skin indicative of the level of calm of the player, means for sensing the difference in said level between the players, means for indicating a predetermined degree of difference in said level of calm between the players, means for detecting whenever said difference exceeds





said predetermined degree, means for keeping count of each time said difference exceeds said predetermined degree, a plurality of said scoring displays adapted to be respectively associated with said plurality of players, and means for scoring each said count in that one of scoring displays associated with the calmer player.

4,358,119

APPARATUS FOR GAS-TIGHT SEALING OF CONNECTION POINTS OF ROTATIONALLY MOUNTED MACHINE PARTS

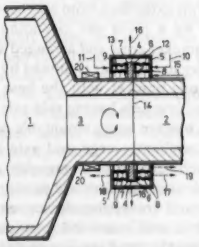
Alfred Kryczun, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,735

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1980, 3003001

Int. Cl.³ B01D *33/28*

U.S. Cl. 277—3 **3 Claims**



1. An apparatus for gas-tight sealing a connection area between a stationary feed line or exhaust line and an exhaust port of a rotary reaction cylinder rotationally mounted with respect to said feed or exhaust lines comprising:

an annular disc mounted on the exterior of said exhaust port at an edge thereof adjacent to said connection area;

an annular channeled housing mounted on said stationary feed or exhaust line spanning said connection area and surrounding said annular disc, said housing having a square U-shaped cross section;

a pair of washers disposed on opposite sides of said annular ring and adjacent thereto; and

a pair of hollow bellows jackets each having an end thereof connected to an interior wall of said housing and each having an opposite end respectively connected to said washers for supporting said washers in said housing in bearing relation against said annular disc for gas-tight sealing of said connection area.

4,358,120

SEALS

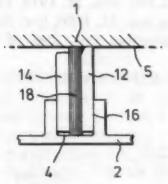
Alan Moore, Bristol, England, assignor to Rolls Royce Limited, London, England

Filed May 11, 1981, Ser. No. 262,502

Claims priority, application United Kingdom, May 31, 1980, 8017887

Int. Cl.³ F16J *9/16*

U.S. Cl. 277—192 **5 Claims**



1. A seal assembly comprising two non-relatively rotating components, a split piston ring carried on one of the components and dimensioned to contact a co-operating sealing surface of the other component around one circumference, an annular mass of tightly-packed resilient bristles sandwiched between the piston ring and a second ring, the bristles lying at an angle to the radial direction and being dimensioned to lie within said circumference of the piston ring when said circumference of the piston ring is in contact with the co-operating sealing surface, and to project from said circumference into contact with the co-operating sealing surface when the piston ring loses contact therewith.

4,358,121

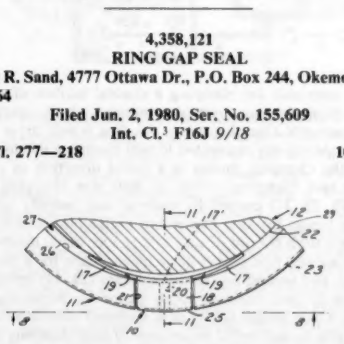
RING GAP SEAL

Darrel R. Sand, 4777 Ottawa Dr., P.O. Box 244, Okemos, Mich. 48864

Filed Jun. 2, 1980, Ser. No. 155,609

Int. Cl.³ F16J *9/18*

U.S. Cl. 277—218 **10 Claims**



1. A ring gap seal for use in combination with a compression ring seated in a peripheral, rectangular ring groove on a piston,

as in an internal combustion engine, an air compressor, a pump, or a refrigerator pump, and a rotating shaft seal ring, and wherein the ring groove has a top end wall, a bottom end wall, and an inner end wall and the compression ring has a gap formed therethrough, characterized in that the ring gap seal includes:

(a) a first portion for seating on the top side of the compression ring to cover the upper side of the ring gap and seal the same;

(b) a second portion, integrally connected to the first portion, and disposed at an angle thereto on the inner side of the compression ring to cover the inner side of the ring gap, and for mating abutment against the bottom end wall of the ring groove to cover the lower end of the inner side of the ring gap to seal the same against pressure leakage from inside of the compression ring to the outside thereof along the bottom of the ring; and,

(c) means for preventing relative rotation between the compression ring and the ring gap seal without creating any pressure leakage path across the bottom of the compression ring from the inside thereof.

4,358,122

APPARATUS FOR POWER CLAMPING WORK PIECES

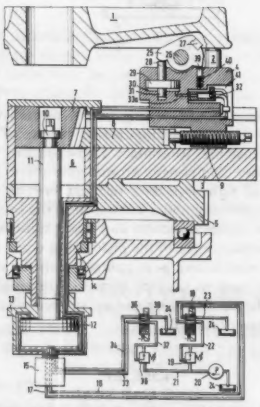
Lothar Heymanns, and Heinz vom Dorp, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Division of Ser. No. 51,350, Jun. 25, 1979, Pat. No. 4,138,293. This application Sep. 22, 1980, Ser. No. 189,301

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1978, 2829152

Int. Cl.³ B23B *5/34, 31/10, 31/40*

U.S. Cl. 279—2 A **4 Claims**



1. An apparatus for clamping a conical surface of a work piece, such as the inner rim of a railroad wheel, comprising radially movable clamping means **(4)**, first power drive means **(7, 8, 12)** operatively connected to said clamping means **(4)** for moving the clamping means in a radial direction to exert a force on said clamping means, at least one clamping tooth means **(25, 26, 27)** carried by each of said radially movable clamping means for first impressing a clamping notch into a work piece with the aid of said first power drive means prior to operating said first power drive means again for a clamping operation, and second power drive means **(29, 40)** operatively connected to said clamping tooth means for displacing each clamping tooth means axially in a direction substantially perpendicularly to said radial movement of said clamping means, wherein said clamping tooth means comprise rocker means **(25, 26)**, means tiltably securing said rocker means to said radially movable clamping means **(4)**, said second power drive means comprising power operated piston cylinder tilting means **(28, 29)** arranged for cooperation with said rocker means **(25)** at one side thereof for rocking said rocker means in one direction and spring biased tilting means also arranged for cooperating with said rocker means **(25)** at another side thereof for rocking said rocker means in the opposite direction, said second power drive means **(29, 40)** being operable independently of said first power drive means **(7, 8, 12)** for positioning said clamping tooth means into a defined position relative to said clamping notch, whereby the engagement of the tooth means with the clamping notch during the clamping operation prevents a displacement of the work piece during the clamping operation.

4,358,123

ATTACHMENT FOR A GROUND TRAVERSING DEVICE AND/OR A GROUND TRAVERSING DEVICE

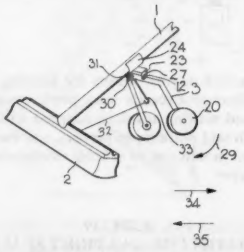
Dean E. Richards, 752 Maioro St., Avondale, Auckland, New Zealand

Filed May 15, 1979, Ser. No. 39,212

Claims priority, application New Zealand, May 16, 1978, 187294; Sep. 8, 1978, 188378

Int. Cl.³ B62B *1/00*

U.S. Cl. 280—47.13 R **5 Claims**



1. An attachment for a ground traversing device comprising a bracket engageable on a handle of a ground traversing device, a substantially U-shaped axle pivotally mounted at its central portion on said bracket with the arms of the U-shaped axle depending therefrom, roller means mounted on the free ends of the arms of said axle to engage the ground, stop means to limit pivotal movement of said axle to a range between forward and rearward positions, said stop means comprising a pair of substantially U-shaped brackets each formed by a base and two spaced arms extending from said base pivotally affixed one to the other by a pivot pin extending through aligned apertures in said bracket arms and arranged so that pivoting of one bracket relative to the other is limited by engagement of at least one arm of one bracket with the base of the other said bracket, one of said brackets having said axle mounted thereon and the other said bracket being mountable on said handle, and biasing means to resiliently urge said axle into said forward position, said attachment being engageable on said handle so that when said axle is in said forward position said attachment supports said ground traversing device on the ground and when said axle is in said rearward position said attachment does not support said ground traversing device and means to releasably retain said axle in any position between said forward and rearward position.

4,358,124

UTILITY CART

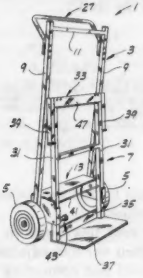
Robert C. Geschwender, Lincoln, Nebr., assignor to Concept Engineering, Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 945,858, Sep. 26, 1978, Pat. No. 4,220,346. This application Jul. 18, 1980, Ser. No. 169,936

The portion of the term of this patent subsequent to Sep. 2, 1997, has been disclaimed.

Int. Cl.³ B62B *1/04*

U.S. Cl. 280—47.18 **22 Claims**



1. A utility cart comprising:

an upwardly extending frame;

a pair of wheels journalled on the lower end of the frame at opposite sides thereof for rotation about an axis extending transversely of the frame;

a bed pivoted adjacent one of its ends, constituting its back end, on the frame at the lower end of the frame for swinging about an axis generally parallel to the axis of rotation of the wheels between an extended position in which the bed extends generally perpendicularly forwardly from the frame, and an upright position in which the bed extends alongside the frame;

support means adjacent the back end of the bed for supporting an object to be carried on the cart when the bed is in its upright position;

leg means mounted at the front end of the bed for movement between a first position for supporting the bed when in its extended position, and a second folded position; and

means for locking said leg means in said first bed-supporting position.

4,358,125

WHEELCHAIR FRAME CONSTRUCTION

Derek A. Charles, Four Marks, England, assignor to Vessa Limited, Hampshire, England

Filed Apr. 1, 1980, Ser. No. 136,217

Claims priority, application United Kingdom, Apr. 3, 1979, 7911614

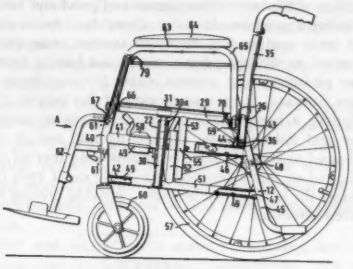
Int. Cl.³ B62M *1/14*

U.S. Cl. 280—242 WC **22 Claims**

1. A wheelchair frame adapted to be associated with supporting wheels, the frame being assembled from a plurality of modular units of prefabricated standard configuration that are adapted to be variably positioned relative to one another at the time of assembly and then fixed in adjusted position relative to one another to provide a wheelchair frame having dimensions corresponding to the specific requirements of an individual user of the wheelchair, said wheelchair frame including a pair of opposed parallel lateral frame structures adapted to be disposed in horizontally spaced relation to one another, each of said lateral frame structures comprising:

a prefabricated modular forward frame unit having integral upper and lower rail sections;

a prefabricated modular rear frame unit having integral upper and lower rail sections, the rail sections of the prefabricated modular forward and rear frame units being respectively disposed in opposing aligned relation to one another to define at least part of upper and lower rails of a closed frame structure, said upper and lower rails being arranged to telescope by displacement of said forward and rear frame units relative to one another in a direction parallel to the directions of said upper and lower rail



sections thereby to permit adjustment of the length of said rails to a desired value within a range of lengths during assembly of said wheelchair frame, and means for permanently securing said forward and rear frame units to one another against relative longitudinal movement as assembled at the desired rail length of said closed frame structure.

4,358,126

INVALID VEHICLES

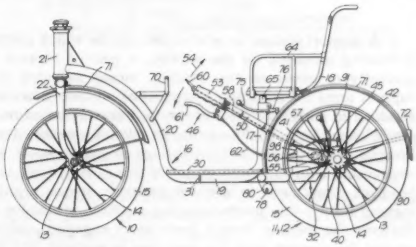
Arthur W. Mitchell, "Sandyacre" 18, Ballyardle Rd., Kilkeel, County Down, and Elbert J. Cornish, 12, Melrose Park, Kilkeel, County Down, both of Ireland

Continuation-in-part of Ser. No. 20,229, Mar. 12, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,177

Claims priority, application United Kingdom, Mar. 14, 1978, 10431/78

Int. Cl.³ B62M *1/14*

U.S. Cl. 280—242 WC **3 Claims**



1. An invalid vehicle for indoor and outdoor use in the form of a velociman having a frame, three wheels mounted on said frame in triangular disposition, two of said wheels being coaxial and transversely spaced, the other single wheel being longitudinally spaced therefrom and having a low friction rotatable movement relative to the frame, a seat mounted on said frame within said triangular disposition, first and second hand operated lever means each respectively located positioned adjacent different sides of the seat, one end of each lever being fulcrummed at a location below the level of the seat by a hand grip on the other end of said lever for gripping by a person seated in the seat for pivoting the levers about their fulcrums in a fore and aft pump action, and first and second transmission means respectively associated with said first and

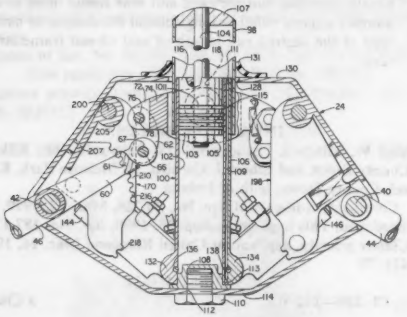
second hand operated lever means to drive each of said co-axial wheels independently of the other co-axial wheel, each transmission means having input and output drive means with the input drive means being connected to the associated one of said hand operated lever means and the output drive means being connected to the axle of one of the co-axial wheels whereby pump action of the associated lever means causes rotation of the input drive means and pawl and ratchet means including a pawl mounted for pivotal movement on its associated lever and having first and second ends and a ratchet mounted on the input drive means and having teeth about its outer periphery and control means for selectively providing either forward or reverse motion of the output drive means including a hand operated switch means mounted on each lever and linking means connecting said switch means with said pawl to provide selective positioning thereof by pivoting said pawl so that a selected one of the outer ends of the pawl engages the teeth of the ratchet to provide driving force in the desired direction.

4,358,127

SUPPORT SYSTEM FOR A WHEELED VEHICLE

Russell P. Kissick, 391 Greenwell Rd., Cincinnati, Ohio 45238

Filed Jan. 8, 1981, Ser. No. 223,424
Int. Cl.³ B62H *1/02*
U.S. Cl. 280—303 **4 Claims**



1. A support system for a wheeled vehicle which comprises a housing mounted on the vehicle, a pair of support arms pivotally mounted on the housing, means mounted on the support arms for engaging a supporting surface, a crank arm attached to each support arm, tooth means mounted on each crank arm, a pair of locking fittings pivotally mounted on the housing, each of the locking fittings including tooth means engageable with the tooth means of one of the crank arms to hold the crank arms in selected positions, means urging the locking fittings into tooth engaging position, means for withdrawing the locking fittings from tooth engaged position to release the support arms for swinging movement, and means for swinging the support arms between a raised position and a lowered vehicle supporting position, the locking fittings holding the support arms in selected lowered position when released.

4,358,128

SELF ALIGNING TRUCK TRAILER

Arthur D. Chambers, P.O. Box 702, Lumby, British Columbia, Canada (V0E 2G0)

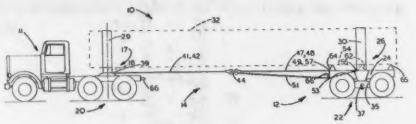
Filed Aug. 29, 1980, Ser. No. 182,839
Int. Cl.³ B60P *3/40*
U.S. Cl. 280—404 **6 Claims**

1. A trailer connector for use in a tractor and trailer combination for carrying an elongated, self-supporting load; in which the tractor has a swivable front bunk mounted for pivoting about a pivot axis and is adapted to retain a front portion of the load thereon; and the trailer has a rear bogey having at least one pair of road bearing wheels and a non-swivelling rear bunk mounted on the bogey and adapted to retain a rear portion of the load thereon; the rear bogey having a suspension such that the rear bunk can rock longitudinally in a forward and rearward manner relatively to the wheels about a transverse rocker axis, the trailer connector comprising:

(1) flexible link means having

(a) right hand and left hand forward link portions extending rearwardly from the front bunk,

(b) right and left hand rear link portions extending forwardly from the trailer,



(c) joining means to join the forward link portions to the rear link portions,

the forward and rear link portions forming two isosceles triangles with their vertices adjacent the central longitudinal axis connected and coinciding with each other;

(2) a stabilizing link extending between a forward connection of the rear link portions and a portion of the trailer spaced beneath a straight line extending between the rear connections of the rear link portions with the trailer; and

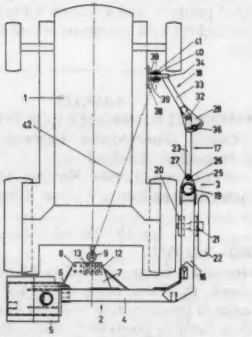
(3) counteracting means on the trailer cooperating with the stabilizing link to counteract a turning moment applied by the rear link portions to the trailer.

4,358,129

TRACTOR WITH A BUILT-ON UNDERFRAME FOR A TILLING MACHINE WITH ARM

Joris J. Thomas, Brusselsesteenweg 134, B - Merchtem, Belgium

Filed Aug. 25, 1980, Ser. No. 180,564
Claims priority, application Belgium, Sep. 7, 1979, 2/58054
Int. Cl.³ B60D *1/14*
U.S. Cl. 280—473 **2 Claims**



1. Tractor with a built-on underframe for a tilling machine with arm, which underframe comprises:

(a) a back part which runs behind the tractor, in a crosswise direction and is pivotally fastened in but one location on the tractor back side, with a hinged connection said part being tiltable relative to the tractor about an axis which runs front to back,

(b) a sidewise part having a front end and back end which extends along the side of the tractor, the back end thereof connecting to the back part and the front end thereof extending to opposite the tractor engine and being pivot-

ally fastened to the tractor with a hinged connection, said part also being tiltable about an axis which runs front to back, in such a way that the complete underframe can tilt relative to the tractor about both said hinged connections, said sidewise part comprising at least two parts which are swingably fastened relative to one another about an axis running from bottom to top and means for locking both said parts in at least one position relative to one another,

(c) means for mounting the tilling machine arm on said sidewise part, and

(d) a wheel which is mounted on said sidewise part and bears on the ground.

4,358,130

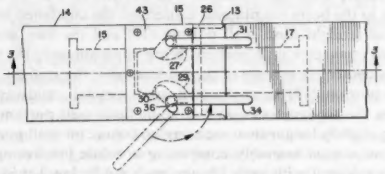
QUICK-DETACHABLE SECTIONAL SKI

Patrick J. Adams, 500 Zimalcrest Dr., Columbia, S.C. 29221

Filed Nov. 24, 1980, Ser. No. 209,833

Int. Cl.³ A63C *5/02*

U.S. Cl. 280—603 **9 Claims**



1. A sectional ski comprising:

forward and rear ski portions; a forward coupling means bonded to said forward ski portion comprising a female cam housing having a recessed area;

a rear coupling means bonded to said rear ski portion comprising a male lock insert having a narrow blade extension which slidably engages with said female cam housing when inserted into said recessed area;

a releasable locking means for locking said forward coupling means and said rear coupling means together comprising cams and cam recesses, eccentrically mounted cam shafts, eccentric slots, and cam lock arms provided in said female cam housing which cams can be rotated so as to engage and disengage the surface of cam slots provided in said narrow blade extension of said male lock insert when said forward and said rear coupling means are mated together.

4,358,131

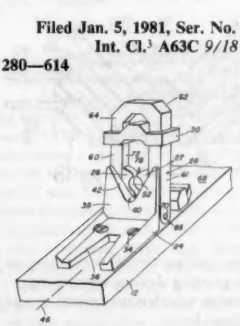
HEEL BINDING FOR CROSS-COUNTRY SKIS

Thomas A. Schwartz, 23 Greenwood St., Wakefield, Mass. 01880

Filed Jan. 5, 1981, Ser. No. 222,370

Int. Cl.³ A63C *9/18*

U.S. Cl. 280—614 **7 Claims**



1. A heel binding for a cross-country ski comprising:

a base adapted to be fixed to said ski,

oppositely facing first and second latch members,

said first and second latch members having oppositely facing first and second latch surfaces, respectively,

said first and second latch members being rotatably mounted on said base for movement between a first position in which said first and second latch surfaces are spaced apart and a second position in which said first and second latch surfaces are close and releasably secure a portion of said heel between them,

biasing means connected to said latch members to bias said latch members in said first position, and

spaced apart first and second flexible beam means mounted on said base for movement between a first position in which said beam means are out of operative contact with said latch members, and a second position in which said first and second flexible beam means flexibly hold said first and second latch members in said latch member second position,

said first and second latch surfaces including first and second cam surface portions, respectively, said cam surface portions being shaped to move said latch members outward against the resistance of said flexible beam means and release said heel portion when substantial force is applied to said heel portion.

4,358,132

MULTIDIRECTIONAL RELEASE SAFETY SKI BINDING

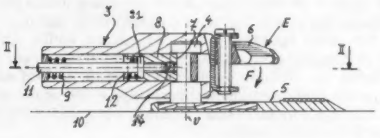
Jean J. A. Beyl, Nievre, France, assignor to Look S.A., Nievre, France

Filed Feb. 21, 1979, Ser. No. 13,167

Claims priority, application France, Mar. 3, 1978, 78 06102; Oct. 27, 1978, 78 30571

Int. Cl.³ A63C *9/00*

U.S. Cl. 280—628 **14 Claims**



1. A safety ski binding comprising:

a vertical pivot member adapted for mounting on and substantially perpendicular to the surface of a ski and defining a vertical axis, said pivot member including a pair of diametrically opposed cam means;

a body rotatably mounted for pivotal movement about said vertical pivot member in a first direction substantially parallel to the surface of the ski;

a rigid end piece for cooperative engagement with one end of a ski boot and pivotally connected to said body about a horizontal axis lying transverse to the elongation of the ski for pivotal movement in a second direction substantially perpendicular to the surface of the ski and said first direction, said end piece including at least one ramp;

a pair of pistons movable in the longitudinal direction of the ski;

a resilient member interposed between said pistons for urging each said piston into engagement with a respective one of said cam means; and

a follower disposed for engagement with said at least one ramp of the end piece and with one of said pistons and for relative movement with respect to said body such that said follower causes movement of said one piston away from the associated cam means on pivotal movement of said end piece about said horizontal axis.

4,358,133

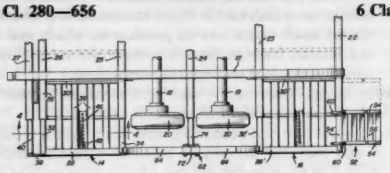
ADJUSTABLE WIDTH TRAILER

James L. Stucky, R.R. 1, Moundridge, Kans. 67107

Filed May 18, 1979, Ser. No. 40,456

Int. Cl.³ B60P *3/06*

U.S. Cl. 280—656 **6 Claims**



1. A vehicle which is adjustable in width from a first width of legal dimensions for use on public highways to a second width for transporting wide track machinery, said vehicle comprising, in combination; a main frame extending longitudinally of said vehicle, support wheel means mounted to said main frame and having a track of legal dimensions for use on public highways, a pair of front and rear platforms spaced to the front and rear of said wheel means on at least one side of said main frame, first mounting means for mounting said platforms for movement between retracted positions wherein said platforms are wholly supported within the corresponding side of the track of said support wheel means and extended positions wherein said platforms are extended laterally outwardly past said corresponding track side, longitudinal side rail means, second mounting means removably mounting said side rail means from and between said platforms and to said main frame outwardly of said track side when said platforms are in their extended positions, said first mounting means including a plurality of first support members connected to said main frame and extending laterally thereof for a distance less than the track of said support wheel means, each of said platforms including a generally rectangular frame which is slidably received in said first support members, said second mounting means including a telescoping support member mounted from said main frame for movement between a retracted position within said track and an extended position, said second mounting means further including an extension member mounted on each of said side rail means, said extension members being received in cooperating apertures formed in said platforms, when said platforms are in their extended positions.

4,358,134

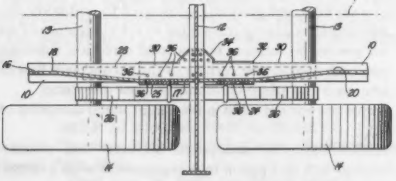
TRAILER FRAME BEAM

Andrew J. Scully, Macomb County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 24, 1980, Ser. No. 200,297

Int. Cl.³ B62D *53/06*

U.S. Cl. 280—676 **2 Claims**



1. In a tandem wheel trailer having a frame that includes a pair of longitudinal I beams spaced outboard from the trailer longitudinal centerline, said longitudinal I beams having their web walls arranged vertically to provide the trailer frame with its longitudinal stiffness and rigidity; and transverse beams extending between the longitudinal I beams at spaced intervals therealong to give the trailer frame its stiffness and rigidity in the transverse direction; a tandem wheel suspension assembly supportably engaging the I beams near their rear ends; said suspension assembly including two longitudinally spaced axles for the trailer wheels and a spring mechanism providing a resilient interconnection between the axles and each trailer frame I beam: the improvement wherein each longitudinal I beam comprises a top flange **(31)**, a bottom flange **(30)** and an interconnecting web wall **(16)**; each web wall being located in a vertical plane approximately midway between the edges of the top and bottom flanges except for a rearward portion of said web wall located between the aforesaid tandem axles; said rearward portion of each web wall including an elongated straight wall portion **(17)** having its outer surface flush with the outboard edges of the beam top and bottom flanges, a first connector wall portion extending forwardly from said straight wall portion **(17)** at an acute angle to the beam longitudinal centerline, and a second connector wall portion extending rearwardly from said straight wall portion **(17)** at an acute angle to the beam longitudinal centerline; the combined length of said straight flush wall portion **(17)** and the two acutely angled connector wall portions being approximately the same as the centerline spacing of the tandem axles; the straight flush wall portion **(17)** being located approximately midway between the tandem axles; said straight flush wall portion **(17)** being slightly longer than each angled connector wall portion; said suspension assembly comprising a saddle bracket operatively engaged with each I beam; each saddle bracket including an upstanding wall **(25)** having direct surface area engagement with said straight flush wall portion **(17)** of the I beam, and a horizontal wall **(32)** underlying the bottom flange of the I beam; said bracket being approximately the same length as said straight flush wall portion **(17)**; first connectors extending through each bracket upstanding wall **(25)** and straight flush wall portion of the associated I beam; and second connectors extending through each bracket horizontal wall **(32)** and bottom flange of the I beam.

4,358,135

CONNECTOR FOR IGNITING CIRCUIT OF PRIMING DEVICE

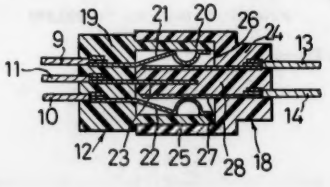
Noboru Tsuge, Kariya; Satosi Kuwakado, Aichi; Katsuyuki Tanaka, Okazaki, and Toshiaki Shimogawa, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 30, 1980, Ser. No. 202,433

Claims priority, application Japan, Nov. 2, 1979, 54-152706[U]

Int. Cl.³ B60R *21/10;* **H01R** *13/71*

U.S. Cl. 280—806 **9 Claims**



1. A connector for an igniting circuit connecting an igniting signal generator and a priming device, comprising:

a first connector member which is connected to said priming device through signal lines;

said first connector member comprising:

a casing made of insulating material and provided with an axially extending cavity;

a ground terminal made of electric conductive material,

which is connected to a ground line and projects into said cavity in the axial direction thereof; and

a pair of signal terminals made of electric conductive and elastic material, which are connected to said signal lines of said priming device respectively and project into said cavity in the axial direction thereof at a predetermined distance from said ground terminal, one portion of each of said signal terminals being elastically contacted with said ground terminal; and

a second connector member which is connected to said igniting signal generator through signal lines and is to be engaged with said first connector member;

said second connector member comprising:

a casing made of insulating material and provided with an axially extending cavity opposing to said cavity of said first connector member;

a projecting portion made of insulating material, which is axially formed within said cavity and provided with an axially extending slot for receiving said ground terminal therein; and

a pair of signal terminals made of electric conductive material, which are disposed along said projecting portion so as to be opposed to each other; and are connected to said signal lines of said igniting signal generator;

whereby when said first connector member is engaged with said second connector member, said ground terminal is inserted within said slot formed in said projecting portion of said second connector member and said pair of signal terminals of said first connector member are separated from said ground terminal by said projecting portion and then connected to said signal terminals of said second connector member respectively.

4,358,136

ENERGY ABSORBING DEVICE FOR USE WITH VEHICULAR SEAT BELT

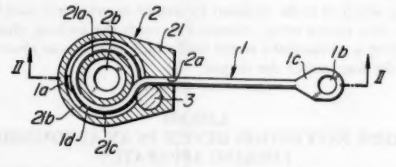
Noboru Tsuge, Kariya; Satosi Kuwakado; Toshiaki Shimogawa, both of Aichi, and Toshihiro Takei, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 28, 1980, Ser. No. 211,295

Claims priority, application Japan, Nov. 30, 1979, 54-166251[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—806 **7 Claims**



1. An energy absorbing device for use with a seat belt of a vehicle, comprising a housing adapted to be secured to the vehicle and defining an interior space and a narrow passage extending between said interior space and the outer surface of said housing, an elongated rod-like strip of a metal including an outer end portion extending from said housing and adapted to be connected to the seat belt, a coiled portion adjacent to the other end of said strip and having a plurality of axially arranged turns disposed in said interior space and an intermediate portion interconnecting said coiled portion and said outer end portion and extending from said interior space outwardly through said narrow passage, strip bending and guiding means disposed between said interior space and said narrow passage, the arrangement being such that normally said intermediate portion of said metal strip extends in engagement with said strip bending and guiding means and, when a tension of a magnitude greater than a predetermined level is exerted to the outer end of said metal strip, successive parts of the coiled portion of said wire are bent over and drawn along said strip bending and guiding means, and means for preventing the axis of said coiled portion of said wire from being displaced when the tension is applied to the wire.

4,358,137

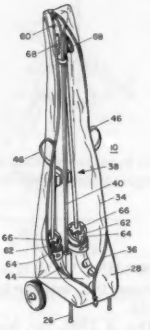
CARRIER FOR SKI EQUIPMENT

Raymond J. Gramm, 2901 Brentwood Ave., Pittsburgh, Pa. 15227

Filed Jul. 3, 1980, Ser. No. 165,950

Int. Cl.³ A63C *11/02*; B62B *1/20*

U.S. Cl. 280—814 **8 Claims**



1. A carrier for transporting and protecting ski equipment comprising:

a base for supporting said equipment and fixing the position of said equipment relative to said carrier;

a flexible enclosure fixed to said base for enveloping and protecting said equipment, said enclosure having formed therein an opening so that said equipment can be placed within said enclosure;

closure means fixed to said enclosure so that said opening can be impermanently sealed;

transporting means fixed to said base for allowing said carrier to be moved along a surface;

grasping means attached to said enclosure for allowing the user to pull or push said carrier along said surface;

whereby said ski equipment can be transported and protected by said carrier and said enclosure can be folded or rolled up to collapse said carrier for storage.

4,358,138

SKI POLE WITH FOOT REST AND SKI LIFT CHAIR ENGAGING MEANS

James L. Laughlin, 229 Dibblee La., Eugene, Oreg. 97404, and Richard F. Hansen, Eugene, Oreg., assignors to James L. Laughlin, Eugene, Oreg.

Filed Dec. 3, 1980, Ser. No. 212,342

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—819 **12 Claims**

1. A ski pole comprising:

an elongated shaft;

first means for removably mounting said ski pole on the seat of a ski-lift; and

second means for providing a foot support when said first means is mounted to the seat of a ski-lift

wherein said first means is unitary with said elongated shaft, and has a first stored position in which said ski pole can be used for skiing without interference from said first means and a second position for mounting to the seat of a ski-lift, said second means is unitary with said elongated shaft and has a first stored position in which said ski pole can be used for skiing without interference from said second means and a second

extended position in which the second means extends perpendicular to said ski pole, and said first and second means are

positioned in recesses in said elongated shaft and flush with the exterior of said elongated shaft when in said first stored position.

4,358,139

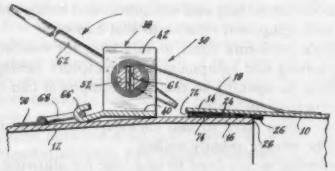
COUPLING FOR MINE VENTILATION CONDUITS

Robert W. Hoy, Warsaw, Ind., assignor to Peabody ABC Corporation, Warsaw, Ind.

Filed Dec. 3, 1980, Ser. No. 212,793

Int. Cl.³ F16L *21/02*

U.S. Cl. 285—332.3 **5 Claims**



1. A coupling for ventilation conduits comprising:

a first tubular ventilation conduit having a flared end portion for receiving an end portion of a second tubular ventilation conduit;

an elongate flexible strap attached to one of said tubular conduits and having a length sufficient to reach said other tubular conduit;

a resilient compressible member positioned between the end portions of said conduits; and

means for tightening said flexible strap length and for holding said tightened strap length, said means for tightening and holding being secured to said other tubular conduit and providing for tightening of said strap to draw said tubular conduits together to compress said resilient member between said flared end portion of said first conduit and said end portion of said second conduit to thereby provide a substantially air tight seal between said conduits, said means for tightening and holding comprises a body having two walls extending upwardly from a floor, each of said walls including an aperture for receiving a rotatable spool for winding said strap, said spool having a central portion extending between said walls including means for retaining said strap, said spool including ends extending through said apertures, at least one of said ends including a hole extending transversely to the longitudinal axis of the spool, said hole receiving an elongate lever arm slidable within said hole to provide for rotation of said spool, said elongate lever arm moveable to an engaged position with one of said conduits prevent unwinding of said strap, said means for tightening and holding including a hook extending from one side of the body, said other tubular conduit having a strap attached thereto, said strap having a ring attached at the end thereof for releasable engagement with said hook to provide for releasable securement of said means for tightening and holding to said other conduit.

4,358,140

PIPE COUPLING DEVICE

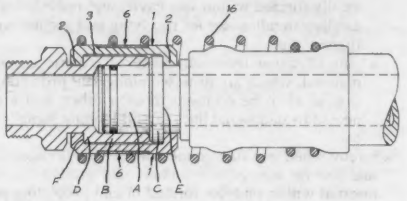
Gunnar Jonsson, Akersberga, Sweden, assignor to Nolic I Borlange AB, Borlange, Sweden

Filed Dec. 30, 1980, Ser. No. 221,265

Claims priority, application Sweden, Jan. 4, 1980, 8000082

Int. Cl.³ F16L *21/06*

U.S. Cl. 285—419 **1 Claim**



1. A device for locking pipe and hose couplings of the type comprising two complementary, radially fixed members provided with external, radial abutment surfaces facing on both sides in the axial direction for arcuate locking elements meshing with said abutment surfaces and having inwardly extending end edges, said locking elements being adapted to be fitted over the coupling members and being fixed against radial displacement by a cut ring enclosing said members, wherein the free ends of the ring are bent into U-shape and adapted to straddle and enclose each one edge of one locking element and wherein the ring and the respective locking element are provided with portions which are adapted, on introduction of the locking element edges into the bent-over ends of the ring, to intermesh with a snapping action for positively interlocking the locking element edges in their positions in the bent-over ends of the ring, each end portions of the ring having an inwardly stamped tongue and the outside of each locking member having a recess cooperating with the tongue adjacent that edge which is to be enclosed by and be inserted into said bent end, said recess being delimited towards the locking element edge by a substantially radial wall which serves as an abutment for the free end of the tongue.

4,358,141

NOISE PREVENTION DEVICE IN AN AUTOMOBILE LOCKING APPARATUS

Yoshikazu Hamada, Tokyo, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 135,900

Claims priority, application Japan, Apr. 7, 1979, 54-42179; Apr. 7, 1979, 54-46029[U]; Apr. 7, 1979, 54-46031[U]

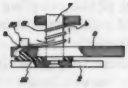
Int. Cl.³ E05C *3/26*

U.S. Cl. 292—216 **10 Claims**

1. In an automobile door locking apparatus comprising a latch, said latch comprising a projection which at one side surface together with other parts of said latch defines a recess engageable with a striker mounted on an automobile body, a ratchet engageable with a shoulder formed on another side surface of said projection to prevent reverse motion of said latch, an open lever operative to release the engagement between said ratchet and said latch, and noise prevention means comprising an integral resilient body having portions overlying said latch projection one side surface and another side surface and the portion of another surface of said latch projec-

tion between said one and said another side surfaces of said latch projection.

2. In an automobile door locking apparatus comprising a latch having a recess engageable with a striker on the automobile body, a ratchet engageable with a shoulder of said latch to



prevent reverse motion of said latch, an open lever operative to release the engagement of the ratchet with the latch, and noise prevention means which comprises a spiral spring mounted on a shaft for the latch which biases said latch in a selected direction about said shaft and which also provides resilient force upon the latch axially of said shaft.

4,358,142

CAN CRUSHING DEVICE

Arthur A. Montalvo, 1505 N. Franklin Pl., Apt. 305, Milwaukee, Wis. 53202

Filed Feb. 19, 1981, Ser. No. 236,219
Int. Cl.³ A47F *13/06*
U.S. Cl. 294—19 R **1 Claim**

1. A hand held device for manually crushing disposable beverage cans comprising:

a generally cylindrical handle member,

a generally cylindrical crushing member for engagement with the sidewall of the can, said crushing member having an approximate longitudinal axis at least equal to the diameter of the can and a diameter less than the longitudinal axis of the can whereby upon impact with the can substantially the entire sidewall of the can is deformed and whereby the crushing member may be withdrawn from said deformed can with said deformed can remaining in its resting place, and

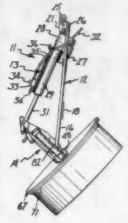
an elongated connecting member joining the approximate center of the longitudinal axis of said handle to the approximate center of the longitudinal axis of said crushing member, the longitudinal axes of said handle and said crushing member being in the same plane and substantially perpendicular to the longitudinal axis of said connecting member.

4,358,143

ROLL LIFT AND TRANSFER APPARATUS

Ralph E. Cullen, Shorewood, Minn., assignor to Central Machine Corporation, Minneapolis, Minn.

Filed Oct. 24, 1980, Ser. No. 200,389
Int. Cl.³ B66C *1/02, 1/54*
U.S. Cl. 294—64 R **23 Claims**



1. Apparatus for loading and unloading a roll of material having an externally accessible opening to and from an independently supported shaft, comprising:

(a) frame means;

(b) probe means projecting from the frame means and constructed for insertion into the roll opening;

(c) retention means associated with the probe means for releasably retaining the roll thereon;

(d) coupling means for releasably connecting the probe means with said independently supported shaft with the probe means and shaft in coaxial alignment and for preventing relative axial movement therebetween when connected;

(e) and roll unloading means movably carried by the frame means for forcing the roll axially from the probe means onto the shaft.

4,358,144

SELF-RELEASING CHOKER

Phillip A. Schmidt, 30336 - 13th Ave. S., Apt. B, Seattle, Wash. 98003, and James H. Norton, 3134 SW. 172nd, Seattle, Wash. 98166

Filed Jan. 9, 1981, Ser. No. 223,934
Int. Cl.³ B66C *1/38*
U.S. Cl. 294—75 **12 Claims**

1. A device for selectively carrying and self-releasing a load comprising:

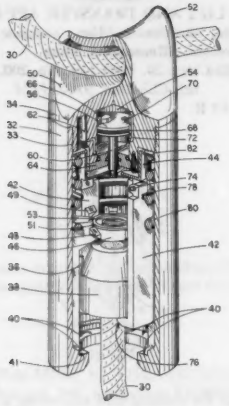
a support;

load holding means carried by the support and movable relative thereto between a load accepting position and a load retaining position, said load holding means also being movable relative to said support between (a) a load accepting station whereat the load holding means is free to accept a load and move to the load retaining position, (b) a load carrying station whereat the load holding means is held in load retaining position and (c) a load releasing station located intermediate said load accepting and carrying stations whereat the holding means can move from its load retaining position to its load accepting position;

locking means for keeping the load holding means in its load retaining position at the carrying station;

releasing means operatively associated with the load holding means, said releasing means having an inactive mode when the load holding means is moving past the load

releasing station from the load accepting station to the load carrying station, and having an active releasing mode when the load is moving past the load releasing station back toward the load accepting station whereby the load holding means is moved from its load retaining position back to its load accepting position to release the load; and



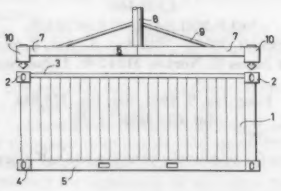
return means for the load holding means acting between said load holding means and said support for yieldingly resisting movement of the load holding means from the load accepting station toward the load carrying station responsive to application of the load to the load holding means.

4,358,145

LIFTING DEVICE FOR CONTAINER

Stig-Ake Svensson, Hammarö, Sweden, assignor to Scal Sweden AB, Lomma, Sweden

Filed May 8, 1980, Ser. No. 147,913
Claims priority, application Sweden, May 9, 1979, 7904086
Int. Cl.³ B66C *1/66*
U.S. Cl. 294—81 SF **1 Claim**



1. A lifting system for lifting parallelepiped containers, comprising:

attachment means secured to the container at the corners of the container, each attachment means defining a shell including at least an exterior side wall and an opposed interior side wall, the exterior side wall including an oblong hole therethrough;

a frame;

coupling means attached to the frame for co-operating with each attachment means to couple the frame to the container and to uncouple the frame from the container, the coupling means including upper and lower tubular sleeve spaced from one another and fixed on the frame with their longitudinal axes aligned with one another, the sleeves include teeth uniformly spaced around their circumferences and facing one another, the teeth of one sleeve being offset about 45° in a circumferential direction to the teeth of the other sleeve, the coupling means including a coupling member which is cylindrical and which is mounted in the sleeves to be rotatably and axially movable therein, the coupling member includes two radially projecting pivots arranged between the teeth of the sleeves, the pivots and teeth co-operating so that for every up and down reciprocal cycle of the coupling member in an axial direction, the coupling member is rotated about 90°, the coupling member further being provided with an arrow point shaped lower end having upper oblong flanges dimensioned to pass through the oblong hole of the attachment means in one rotational position of the coupling member and capable of being retained in the attachment means when the coupling member is rotated about 90° from the one rotational position, the arrow point shaped lower end having a downwardly directed substantially pointed tip, the lower end of the coupling member extending a sufficient distance to pass through the oblong hole and engage the substantially pointed tip against the opposed interior wall in substantially point contact to cause reciprocal movement of the coupling member within the sleeves and rotational movement about the point contact between the tip and the interior wall as the frame is moved in a reciprocating manner adjacent the container;

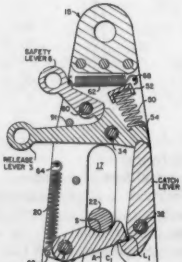
so that as the frame is moved towards the container, the lower ends of all of the coupling members pass through the oblong holes of the attachment means and the substantially pointed tips engage against the opposed interior walls of the attachment means to cause the coupling members to rotate 90° about the tips for every cycle due to the co-operation between the pivots and toothed sleeves, the frame then is moved away from the container and the flanges of the coupling members are retained in the attachment means to couple the frame and container together, the frame then is moved towards the container to engage the substantially pointed tips of the lower ends of the coupling members against the opposed interior walls to cause the coupling members to rotate about 90° and the frame is moved away from the container to remove the coupling members through the oblong holes to uncouple the frame and container from one another so that a great force may be applied to the frame to couple and uncouple the container.

4,358,146

RELEASE MECHANISM

Clifford A. Goudey, Charlestown, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 2, 1981, Ser. No. 230,753
Int. Cl.³ B66C *1/36*
U.S. Cl. 294—84 **10 Claims**



1. Apparatus comprising:

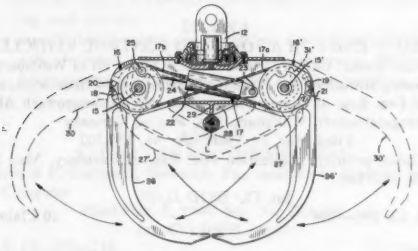
(a) an elongate generally Y-shaped body in which the two legs of the Y form a slot portion adapted to accept a hook-up ring from an external load;

(b) a pivotable gate load bearing member adapted to pivot in and across said slot and having a latch surface at one side of said gate;
(c) bearing means urging said gate to pivot away from the slot whereby said ring may be hooked-up by sliding the ring in the slot past the gate;
(d) a pivotable catch lever having (i) a catch surface at one end of said lever adapted to oppose the latch surface of said gate to latch said gate across said slot and (ii) a latch surface at another end of said lever;
(e) a pivotable release lever having (i) a first catch surface on one side adapted to oppose the latch surface of the catch lever and (ii) a second catch surface on another portion of said lever;
(f) a pivotable safety lever having a latch surface adapted to engage the second catch surface of the release lever;
(g) biasing means biasing said release lever and safety lever toward a position in which opposing catch and latch surfaces are engaged.

4,358,147
MOUNTING AND ACTUATING APPARATUS FOR TONGS

Emory D. Hungerford, Milwaukie, Oreg., assignor to ESCO Corporation, Portland, Oreg.

Filed Nov. 25, 1980, Ser. No. 210,368
Int. Cl.³ B66C *3/16*
U.S. Cl. 294—88 **5 Claims**



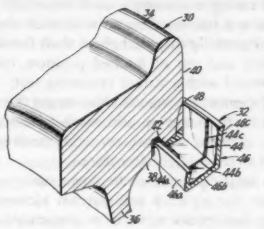
1. A mounting and actuating apparatus for the tongs of a grapple or the like comprising a frame having a pair of spaced apart pulley means rotatably mounted therein, fluid pressure cylinder means on said frame connected to one of said pulley means, cable means connected to said pulley means in tensioned condition and extending between said pulley means in general figure eight configuration whereby rotation of one pulley means by said cylinder means produces synchronized counter-rotation of the other pulley means, and identical tong means operably associated with each pulley means, each pulley means including a sheave member equipped with axially offset grooves to accommodate said cable means, said cable means including offset cable links, each link having an end secured to each sheave member, said fluid pressure cylinder means being pivotally mounted on said frame between said sheave members.

4,358,148
DAMPED RAILWAY WHEEL

Francis Kirschner, East Hills, N.Y., assignor to The Soundcoat Company, Inc., Brooklyn, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,649
Int. Cl.³ B60B *7/04, 17/00, 19/00;* **F16H** *55/14*
U.S. Cl. 295—7 **8 Claims**

1. In a vibration damping assembly for a member that undergoes rotation, and which includes an annular groove in an interior surface of said member which is coaxial with the axis of said member, the improvement comprising an annular metal ring formed from a channel member generally U-shaped in cross-section so as to include two legs and a base, one of the legs of said channel member being positioned within said groove and substantially encased therein by a vibration damping material, the base of said channel member extending adjacent to said interior surface of said rotatable member, the other

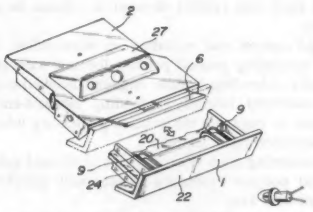


leg of said channel member extending adjacent to an exterior surface of said rotatable member, and vibration damping material sandwiched between said base and other leg of said channel member and the adjacent surfaces of said rotatable member.

4,358,149
ASH TRAY FOR VEHICLE

Mitsuru Iizuka, Yokohama, and Yoshihiko Ishiyama, Isehara, both of Japan, assignors to Nissan Motor Co. Ltd., Yokohama, Japan

Filed Oct. 17, 1980, Ser. No. 197,808
Claims priority, application Japan, Oct. 25, 1979, 54-137986
Int. Cl.³ B60N *3/08*
U.S. Cl. 296—37.9 **4 Claims**



1. An ashtray for mounting on a vehicle instrument panel having an outer casing adapted to accommodate and slidably receive an inner casing provided with a chamber for collecting butts and the like, comprising means for protecting said vehicle and instrument panel from scorching or burning, said means being slidably disposed within said outer casing; spring means having a fulcrum fixed to said outer casing and to at least one actuating point on said protecting means urging said protecting means outwardly and upwardly when said inner casing is withdrawn from said outer casing and beyond said protecting means.

4,358,150
TAILGATE HANDLE AND LATCHING MECHANISM

Culver R. Nash, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 25, 1981, Ser. No. 247,494
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—50 **6 Claims**

1. In a motor vehicle having a cargo body defining an opening, a gate hinged for pivotal movement about a horizontal longitudinally extending axis between a substantially upright position closing at least a portion of said opening and an open position, said body opening including an opposed pair of

striker members, a handle and latching mechanism for retaining the gate in its closed position comprising;

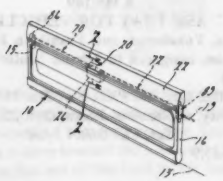
a pair of mirror image latch casing, each said casing mounted in a symmetrically opposite manner on a side edge of said gate;

each said casing enclosing a latch assembly having a pawl element and ratchet element with each element mounted on a horizontally disposed pivot shaft for swinging movement into and out of latched position, each said casing base formed with a striker receiving slot;

said pawl element having shoulder means thereon adapted to engage tooth means on said ratchet element to hold said ratchet element against swinging movement from its latched to its unlatched position;

a tension spring connected between said pawl and ratchet elements biasing each said ratchet element tooth means into latched position with its associated pawl element shoulder means;

the handle pivotally mounted on said gate intermediate its side edges, and operative by rotating a pair of control rods in response to pivotal movement of said handle about a horizontal axis in one direction to pivot each said pawl element into its unlatched position and automatically



pivot each said ratchet element to release its associated striker;

each said control rod including an intermediate longitudinally extending journal portion formed with an inboard laterally extending handle engaged hooked-end portion and outboard laterally extending hooked-end portion adapted to engage a tab portion projecting inboard from its associated pawl element;

means mounting each said control rod on said gate with its journal portion extending substantially parallel to said gate pivotal axis;

each said control rod inboard hooked-end portion interconnected with said handle member;

each said control rod outboard hooked-end portion oriented in spaced juxtaposed relation with its associated pawl tab portion such that upon said handle means being rotated each said rod is rotated on its journal portion axis causing its latch actuator hooked end portion to engage its associated pawl tab whereby each said pawl element is rotated to disengage its shoulder means from its associated ratchet element tooth means to automatically unlatch each ratchet element from its associated striker allowing said tailgate to be pivoted into its open position.

4,358,151

HINGED REAR WINDOW

Herman C. Wood, 30 Porpoise Pl., New Port Richey, Fla. 33552

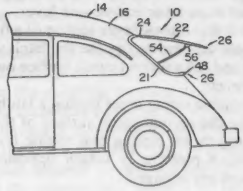
Continuation-in-part of Ser. No. 26,097, Apr. 2, 1979, abandoned. This application Oct. 29, 1979, Ser. No. 89,616

Int. Cl.³ B60J *1/18*

U.S. Cl. 296—146 **8 Claims**

1. In a rear window construction for an automotive vehicle, wherein a body portion having an opening with a first frame and weather seal encompassing the perimeter of the opening, and a window with a second frame and weather seal encompassing the perimeter of the window, together seal off the body opening by said first and second frame and the weather seal being complimentary and capable of fitting together to form a weather tight closure for said body opening;

the provision of a novel hinge construction for positioning the window when open in a stand-off relationship to the body for establishing a clear slip stream air movement through the hinge area and under the window, comprising;



at least one hinge interconnecting the tops of the first and second frames, the hinge construction having means to extend a part thereof for separating the frames in the hinge area when the frames are separated to open the window; and

said hinge means comprising a telescopic hinge for providing a telescopic relationship between said first and second frames.

4,358,152

FRONT END FOR A FORWARD CONTROL VEHICLE

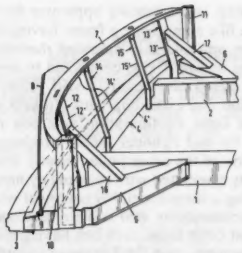
Gustav Mayer; Gerhard Hinz; Herbert Muhs, all of Wolfsburg; Georg Sturmfels, and Hartmut Bürger, both of Brunswick, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,302

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918136

Int. Cl.³ B62D *33/06*

U.S. Cl. 296—188 **10 Claims**



1. In a front end construction for a forward control vehicle with a front panel plate and a rigid bottom cross member supported behind the front panel plate on the front ends of longitudinal members, which the bottom cross member bridges the separation between two A columns of the vehicle, the improvement characterized in that

an upper rigid cross member is positioned at a distance above the bottom cross member and behind the front panel plate, said upper member bridges the separation between the two A columns and is connected therewith in a force-transmitting manner; and

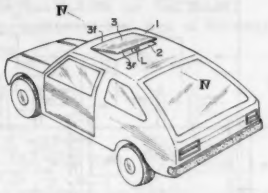
at least one tie member which connects the upper cross member in a force-transmitting manner with the bottom cross member at a location distant from the two A columns.

4,358,153

SUNROOF STRUCTURE

Hidefumi Iwata, Koganei, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 14, 1980, Ser. No. 178,058
Claims priority, application Japan, Aug. 18, 1979, 54/104526
Int. Cl.³ B60J *7/02*
U.S. Cl. 296—213 **3 Claims**



2. In a vehicle sunroof structure having a roof panel formed with an aperture and a movable panel for closing said aperture, the combination comprising:

a water collecting channel member disposed about the periphery of said aperture, said channel member having a wall section depending from said roof panel in which is formed a recess;

a bracket fixed to said channel member so as to enclose said recess and define a chamber;

means defining a slot in said bracket opposite to said depending wall section;

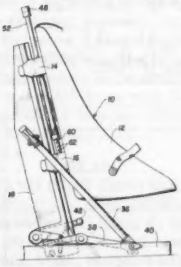
a cup-like hinge receptacle protruding through said slot into said chamber, said hinge receptacle receiving therein a hinge component attached to said movable panel.

4,358,154

VEHICLE CRASHWORTHY SEAT

Richard F. Campbell, Broomall, Pa., assignor to Boeing Vertol Company

Filed Dec. 5, 1980, Ser. No. 213,709
Int. Cl.³ B60R *21/10*
U.S. Cl. 297—216 **12 Claims**



1. In a crash survivable seat arrangement for a vehicle which includes two elements, namely a seat assembly and a support structure, occupant restraint means for securing a vehicle occupant to the seat assembly, seat assembly connecting means for connecting the seat assembly to the support structure to allow translation of the seat assembly relative to the support structure along a predetermined path of travel, and energy attenuating means for controlling the translation of the seat assembly relative to the support structure in a given direction along the path of travel during a crash, the improvement wherein the energy attenuating means comprises:

a plurality of spaced apart, parallel arranged, wires having opposite ends affixed to one element of the two elements and extending substantially parallel to said path of travel;

wire bending means, carried by the other element of the two elements and engaged with at least one wire of said plurality of wires, for bending said at least one wire during translation of the seat assembly in the given direction relative to the support structure, said wire bending means preventing translation of the seat assembly until a predetermined force acts in the given direction on the seat assembly;

and

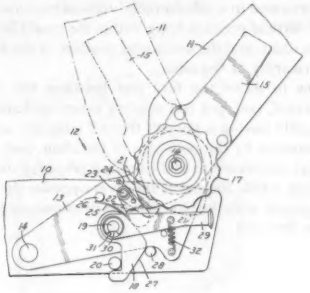
engaging means, connected between the other element and the wire bending means, for progressively engaging or disengaging the wire bending means with the plurality of wires, said engaging means having a maximum engagement setting at which the wire bending means is engaged with all wires of the plurality of wires and a minimum engagement setting at which the wire bending means is engaged with at least one wire of said plurality of wires.

4,358,155

LIMITED SPRING AND INERTIA LATCH SYSTEM

Wolfgang Osterhold, Brighton, Mich., and Bernd A. Klueting, Radevormwald, Fed. Rep. of Germany, assignors to Keiper U.S.A., Inc., Mich.

Filed Aug. 22, 1980, Ser. No. 180,317
Int. Cl.³ B60N *1/02*
U.S. Cl. 297—379 **8 Claims**



1. A hinge fitting for a vehicle having a forward tiltable back rest comprising a first hinge member pivotally attachable to a lower seat member for accommodating forward back rest tilting, a second hinge member attachable to a back rest member and pivotally attached to said first hinge member in substantially spaced relation to said first hinge member's seat pivotal connection with adjustable means to accommodate back rest adjustment to a reclined or otherwise adjusted position, means for limiting backward pivoting of said first hinge member at the occupant's seated position, inertia responsive latch means for preventing forward pivoting of said first hinge member upon sudden vehicle deceleration, means for releasing said latch means responsive to initial forward pivoting of said first hinge member in the absence of sudden vehicle deceleration, and means for restricting latch release action of said last means to a limited operating range of back rest adjustment excluding extremities of adjustment where the back rest approaches alignment with said forward back rest tilting and adjustment pivotal connections.

4,358,156

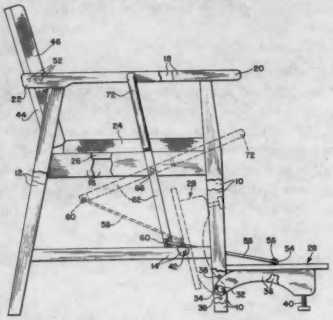
FOOT REST AND ACTUATOR FOR CHAIRS FOR PATIENTS AND INVALIDS

Harold M. Sharff, 11 Gardner Rd., Brookline, Mass. 01246

Filed Mar. 28, 1980, Ser. No. 135,209

Int. Cl.³ A47C *7/50*

U.S. Cl. 297—434 **5 Claims**



1. A chair for invalids and patients comprising front and rear legs, a seat connecting the legs, said seat including a front edge located at a height above the knees of an adult, the legs rising above the seat, and arm rests secured to the top portions of the legs above the seat, one arm rest on eitherside of the seat,

a foot rest, means pivoting the foot rest at its rear edge to the lower portions of the front legs of the chair, and floor engaging means adjustably supporting the forward portion of the footrest in horizontal or slightly slanted positions, said foot rest being pivotable from the substantially horizontal to a substantially vertical position, the foot rest in vertical position lying within the confines of the legs of the chair, and the horizontal position of the foot rest being forwardly of the chair,

means to move the foot rest between the two positions thereof, said foot rest moving means including a movable handle having a portion thereof adjacent an arm rest for actuation by the occupant of the chair, and

a lever connected to said handle, a pivot for the lever on the chair, a link, the end of the lever opposite the handle being engaged with the link, and means connecting the link with the foot rest.

4,358,157

SOLUTION MINING PROCESS

William E. Showalter, Seal Beach, Calif., assignor to Union Oil Company of California, Brea, Calif.

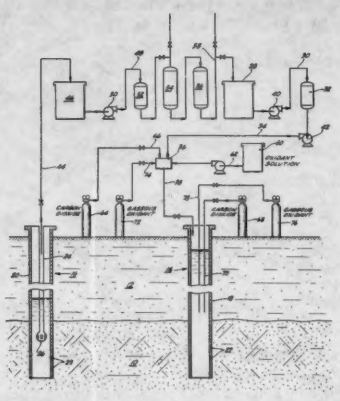
Continuation-in-part of Ser. No. 767,788, Feb. 11, 1977, Pat. No. 4,105,253. This application Apr. 10, 1978, Ser. No. 894,936

The portion of the term of this patent subsequent to Aug. 8, 1995, has been disclaimed.

Int. Cl.³ E21B *43/28*

U.S. Cl. 299—4 **17 Claims**

1. In a method for the solution mining of a substance which in an oxidized state is soluble in an aqueous leaching solution, said method comprising the steps of (1) introducing an oxidant and an aqueous leaching solution into a subterranean formation containing said substance, thereby to solubilize said substance in situ to form a pregnant liquor, (2) recovering said pregnant liquor from said formation, and (3) separating said substance from said pregnant liquor, the improvement comprising:



utilizing as said aqueous leaching solution a solution comprising a dilute aqueous carbonic acid solution; and

intermittently introducing said oxidant into said formation.

4,358,158

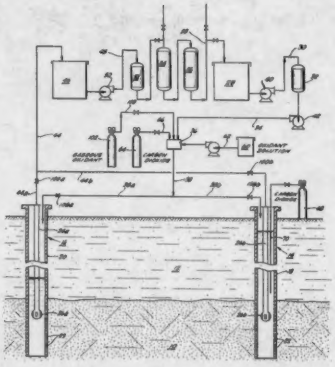
SOLUTION MINING PROCESS

William E. Showalter, Seal Beach, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 767,788, Feb. 11, 1977, Pat. No. 4,105,253, and a continuation-in-part of Ser. No. 894,936, Apr. 10, 1978. This application May 5, 1978, Ser. No. 903,257

Int. Cl.³ E21B *43/28*

U.S. Cl. 299—4 **19 Claims**



1. In a method for the solution mining of a substance which in an oxidizing state is soluble in an aqueous leaching solution, said method comprising the steps of (1) introducing an aqueous leaching solution through a first well into a subterranean formation containing said substance, thereby to solubilize said substance in situ to form a pregnant liquor, (2) recovering said pregnant liquor from said formation through a second well, and (3) separating said substance from said pregnant liquor, the improvement comprising:

utilizing as said aqueous leaching solution a solution comprising a dilute aqueous carbonic acid solution; and

reversing the direction of flow through said formation after a first preselected period of time by injecting said aqueous

leaching solution through said second well and recovering said pregnant liquor from said first well.

4,358,159

APPARATUS FOR SUPPORTING THE ROOF OF AN UNDERGROUND MINE WORKING

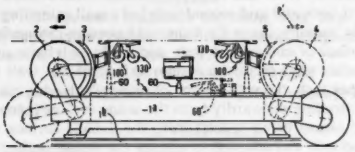
Karl M. Groetschel, Montsalvatstrasse 1a, D-8000 Munich 40, Fed. Rep. of Germany

Filed Nov. 7, 1980, Ser. No. 204,941

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945082

Int. Cl.³ E21D *9/04, 9/10*

U.S. Cl. 299—33 **19 Claims**



1. In a mining machine comprising a body movable in forward and reverse directions of traverse along and adjacent to an upstanding face from which material is to be removed in a mining operation, a cutting element on said body for removing said material and thereby creating a succession of newly exposed elongate roof zones requiring support, and applicator means for applying strips of flexible roof mat, drawn off from a store, in respective positions such that said strips extend with their lengths running longitudinally of respective ones of said newly exposed roof zones, the improvement comprising the provision of

a. mounting means for releasably mounting said applicator means in an operative position of use on said mining machine, said mounting means comprising cooperative releasable parts provided respectively on a part of the mining machine adjacent to and movable with said cutting element, and on said applicator means,

b. transfer means for moving said applicator means between said position of use and a further position spaced from said position of use, and including lifting means engageable with the assembly of applicator means and that one of said releasable parts provided thereon to remove said assembly, support it, and move it to said further position and,

c. coupling means including coupling elements respectively on said lifting means and on said assembly quickly engageable with and releasable from each other to facilitate transfer of said assembly between said positions.

4,358,160

AIR DIVERSION AND DUST CONTROL SYSTEM FOR LONGWALL SHEARERS

Fred N. Kissell, Pittsburgh, Pa.; Terry L. Muldoon, Walpole, Mass.; William E. Schroeder, Jr., Belmont, Mass., and Carl R. Peterson, Boxford, Mass., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,404

Int. Cl.³ E21C *35/20*

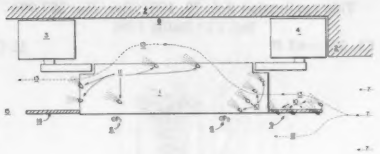
U.S. Cl. 299—43 **6 Claims**

1. In combination with a longwall mining machine having a main frame and a plurality of cutting heads extending laterally to one side of said main frame to engage the longwall of a mine and remove coal therefrom, said cutters located adjacent to the fore and aft portions of said main frame, the improvement comprising an air flow and dust suppressant system including:

(a) a first air flow control means mounted on said main frame and projecting beyond the forward portion thereof, and

(b) a second ambient air flow control means dispersed across the top of said main frame, said second means discharging a dust-suppressing fluid into the air in a direction toward the longwall surface and toward the aft portion of said machine,

whereby causing the ambient air to flow in generally parallel



paths to either side of said machine and then on past said machine; with the path of flow adjacent the mine wall carrying a concentration of the dust and machine gas generated during the mining operation, while the second parallel air flow path remaining virtually free of dust.

4,358,161

MINING EQUIPMENT

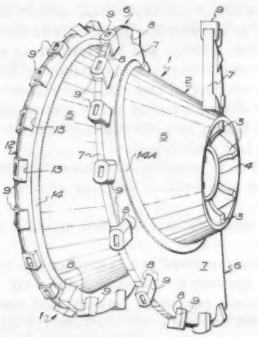
Raymond Needham, Doncaster, England, assignor to Mining Supplies Limited, Doncaster, England

Filed Feb. 9, 1979, Ser. No. 10,953

Claims priority, application United Kingdom, Aug. 3, 1978, 32085/78

Int. Cl.³ E21C *25/10*

U.S. Cl. 299—87 **14 Claims**

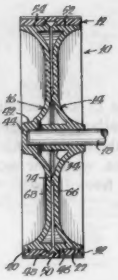


1. A spiral vane shearer disc adapted to be supported from, and rotatably driven by a shearer type coal cutting machine, said disc comprising an outer drum, pick box accommodating means mounted on said drum and including a tire of generally circular cross-section secured to one end of said drum, which end, in service, is remote from said machine, said tire having a plurality of spaced apart sockets preformed therein and extending radially of said tire, each said socket being of a cross section corresponding to that of an elongate pick box adapted to be inserted therein, and each said socket including perimetrically continuous surface portions to surround and to support a pick box about the entire periphery of said pick box over a major proportion of the length of said pick box, with the circular cross-section of said tire enabling said sockets to be disposed at differing angular orientations with optimum support for the pick boxes at all locations.

4,358,162
WHEEL HAVING BUILT-IN HUB

Jerry M. Schneider, Highland Park, and Ronald A. Coules, Barrington, both of Ill., assignors to Unarco Industries, Inc., Chicago, Ill.

Continuation of Ser. No. 107,496, Dec. 26, 1979, abandoned.
This application Jul. 29, 1981, Ser. No. 287,994
Int. Cl.³ B60B *1/06*
U.S. Cl. 301—63 R **12 Claims**



3. A wheel having a built-in hub for receiving an axle, comprising a cylindrical hollow rim having an outside surface and an inside surface and a pair of sides, said rim defining an opening having an axis,

a first disk that is received in said rim, said first disk having an outside circumferential surface that engages said inside surface of said rim, said first disk defining a passageway having an axis at the center of said first disk, wherein said passageway extends through said first disk and terminates at a pair of opposing open ends,

a second disk that is received in said rim, said second disk having an outside circumferential surface, said second disk defining an aperture having an axis at the center of said second disk, wherein said aperture has an axis coinciding with the axes through said passageway in said first disk and said opening in said rim, said second disk having a wall that defines a closed end of said aperture, said aperture also having an open end, said aperture communicating with said passageway,

said second disk including an annular shoulder spaced radially from said aperture defining a cavity adjacent said aperture,

means for mounting said first disk and said second disk to said rim,

said axle being received in said passageway in said first disk and said aperture in said second disk, and

fastening means positioned between said open end of said second disk and one of the open ends of said first disk for engaging said axle and retaining said axle in position within said passageway and said aperture,

whereby the portion of said second disk that define said aperture and said wall comprise a hub for said wheel, said hub limiting the insertion of said axle into said second disk and covering an end of said axle

said fastening means comprising tooth means whereby said axle is insertable into said hub and through said fastening means and is lockingly gripped and retained within said hub by said tooth means.

11. A wheel, comprising

an annular outer rim having an outside surface and an inside surface and a pair of sides, said rim defining an opening having an axis extending therethrough,

a first circular web that is received in said outer rim, said first web having an outside circumferential surface that engages said inside surface of said rim,

a second circular web that is received in said rim, said second web having an outside circumferential surface that engages said inside surface of said outer rim,

means for mounting said first web and said second web to said outer rim, comprising male means on said first web and on said second web, and female means on said outer rim, said male means being engageable with said female means, wherein said male means comprises tab means projecting radially outwardly from said outside surfaces of said first web and said second web, and said female means comprises slot means extending radially inwardly into said inside surface of said outer rim, said tab means being lockably receivable in said slot means,

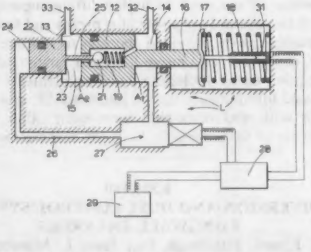
said first web having a wall extending generally radially inwardly from said outside circumferential surface of said first web, and said second web has a wall extending generally radially inwardly from said outside circumferential surface of said second web, said walls each have an inside surface that faces the inside surface of the wall on the other web, the wall on one of said webs having rib means protruding outwardly from the inside surface thereof, said rib means being spaced from the outside surface of said one web and adapted to engage the inside surface of the wall on the other web,

whereby one of said webs is mounted to said outer rim by sliding within said outer rim until said tab means is received in said slot means, and the other of said webs is mounted to said outer rim by sliding within said outer rim until there is engagement between said rib means and the wall of the other web, whereupon the outer portion of the other web flexes about the points of engagement between said rib means and said wall on the other web until said tab means on said other web is received in said slot means.

4,358,163
BRAKE PRESSURE MODULATING VALVE

Alastair J. Young, Kenilworth, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Dec. 11, 1980, Ser. No. 215,512
Claims priority, application United Kingdom, Dec. 14, 1979, 7943237
Int. Cl.³ B60T *8/18*
U.S. Cl. 303—22 R **5 Claims**



1. A vehicle brake system pressure modulating valve having:

a control spring;

a body with an inlet chamber connectable to a master cylinder pressure and an outlet chamber connectable to a brake system pressure;

a main piston to effect pressure modulation and having opposite respective faces exposed in the inlet and outlet chambers and being acted upon in one direction by the control spring and master cylinder pressure and in the other direction by the brake system pressure;

and a control means for control of an operating point at which the main piston begins to effect pressure modulation said control means comprising:

a slave piston connectable to master cylinder pressure;

a valve arranged in the connection between the slave piston and the master cylinder pressure and operable to cut-off the master cylinder pressure to the slave piston;

a first electrical signal means that produces a signal indicative of load on the vehicle;
a second electrical signal means that produces a signal indicative of master cylinder pressure;
and a process means for combining the two signals for consequential operation of the valve to cut-off the master cylinder pressure to the slave piston and thereby effect the operating point for pressure modulation to the brake system pressure, said operating point being controlled by the relationship between the two signals.

4,358,164

METHOD AND CIRCUIT FOR THE GENERATION OF A SPEED REFERENCE SIGNAL FOR AN ANTISKID SYSTEM

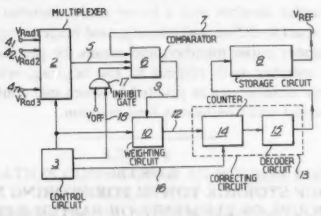
Hans W. Bleckmann, Frankfurt am Main, Fed. Rep. of Germany, and Heinz Loreck, Moedling, Austria, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,383

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951754

Int. Cl.³ G06F *15/20*

U.S. Cl. 303—93 **54 Claims**



6. A circuit for generation of a speed reference signal adjustable to variation in the speed of a vehicle for use in an antiskid system for fluid-operated vehicular brakes comprising:
a storage circuit storing therein a speed reference signal;
a comparator coupled to said storage circuit to compare said reference signal with n instantaneous velocity signals each obtained from a different one of n vehicle wheels;
a weighting circuit coupled to said comparator to weight each output signal of said comparator dependent upon whether said output signal of said comparator is derived from an instantaneous velocity signal generated by a driven wheel or a non-driven wheel; and
a correcting circuit coupled to said weighting circuit and said storage circuit to form a correcting signal in response to said weighted output signals of said weighting circuit, said correcting signal being coupled to said storage circuit to adjust said reference signal stored therein.

4,358,165

HOLDING DEVICE FOR SUPPORTING A TURNABLE SHAFT

Volker Julius, Radevormwald, and Paul Lienenlüke, Sprockhövel, both of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

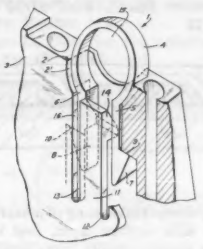
Filed Feb. 2, 1981, Ser. No. 230,587

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 8003736[U]

Int. Cl.³ F16C *17/12, 35/02*

U.S. Cl. 308—22 **2 Claims**

1. A holding device for supporting a turnable shaft in a housing of a machine, particularly a domestic machine, comprising a supporting member having a ring-shaped portion adapted to embrace the shaft and a pair of arms downwardly extended from said ring-shaped portion, said arms being formed with a pair of hooks, the housing being formed with a recess including a circular portion for partially receiving said ring-shaped portion and an elongated portion for receiving said arms in assembly, said elongated portion being formed with a pair of oppositely positioned undercuts, the housing further having two elongated slots spaced from one another to form an elastically yieldable portion therebetween, said elasti-



cally yieldable portion being terminated with a nose, said elastically yieldable portion being inserted between said arms so that said hooks abut against said undercuts and said nose is inserted between said arms whereby said supporting member is arrested in said recess.

4,358,166

POSITIONING DEVICES

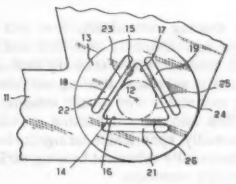
Jacquet-Maurice Antoine, Maurepas, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Jul. 10, 1978, Ser. No. 923,020

Claims priority, application France, Jul. 20, 1977, 77 22278

Int. Cl.³ F16C *27/00*

U.S. Cl. 308—26 **3 Claims**



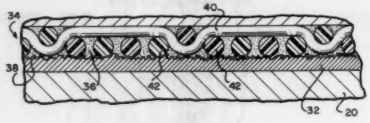
1. A wear compensated positioning device comprising:
a pivot having an outer contour;
a member;
a bearing surface portion integrally formed with said member;
a polygonal shaped opening in said member having a closed inner periphery with substantially straight sides providing said bearing surface portion;
elongated slots each substantially parallel to, and having a length substantially equal to, each of said sides, with each slot spaced from its respective side a distance effective to form a deformable strip between said side and said slot, said deformable strips being connected at their ends to adjacent ones thereof above apices only of said polygonal shaped opening; and
said deformable strips being resiliently deflected when said opening is fitted over said outer contour of said pivot whereby a wear compensated bearing fit is formed therebetween.

4,358,167

BEARING ELEMENT

Harry Magazian, Torrington; Alan L. Gabrielson, and John H. Cowles, both of Bristol, all of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed May 26, 1981, Ser. No. 266,710
Int. Cl.³ F16C *33/20*
U.S. Cl. 308—78 **8 Claims**



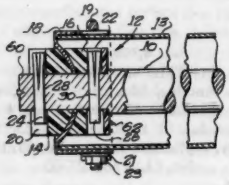
1. A bearing element consisting of a bearing substrate having a low-friction slide surface layer, said layer comprising: a porous coating metallurgically spray-bonded to the substrate surface and having interstices such as craters and undercuts and a lamina section of interwoven solid lubricant threads and bondable threads in an adhesive applied to the coating.

4,358,168

THRUST BEARING

Ingmar N. Kallin, Goshen, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Dec. 8, 1980, Ser. No. 213,824
Int. Cl.³ F16C *17/22, 17/04*
U.S. Cl. 308—135 **9 Claims**



1. A thrust bearing comprising: first and second bearing members and a seat member, said first and second bearing members being mountable to a rotating shaft and each including a substantially spherical bearing surface, and said seat member being mountable free of said rotating shaft and intermediate said first and second bearing members and having mating, substantially spherical bearing surfaces for bearing against the substantially spherical bearing surfaces of said first and second bearing members.

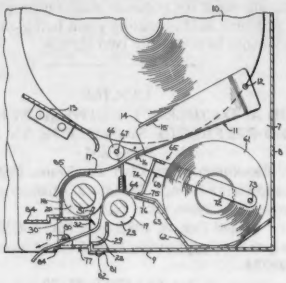
4,358,169

DISPENSER FOR COILED SHEET MATERIAL

Edwin A. Filipowicz, Greenfield, and Robert W. Cornell, Hales Corners, both of Wis., assignors to Griffith-Hope Company, West Allis, Wis.

Filed Jul. 25, 1980, Ser. No. 171,888
Int. Cl.³ B65H *19/00, 19/06*
U.S. Cl. 312—39 **6 Claims**

1. A dispenser for sheet material, comprising a housing having a discharge opening, support means disposed within the housing to support a coiled sheet of material, feeding means for feeding the sheet through said discharge opening, a cutting blade mounted adjacent said discharge opening for cutting a length of said sheet fed through said opening, a discharge member mounted for movement with respect to said discharge opening from a controlled feed position to a continuous feed position, said discharge member when in the controlled feed position directing said sheet from the discharge opening in a generally horizontal attitude, whereby a generally horizontal pull on the dispensed sheet will bring the sheet into contact with said blade to sever the sheet, said discharge member when in the continuous feed position directing said sheet from the discharge opening in a generally vertical attitude, whereby a downward pull on said dispensed sheet will not bring the sheet into contact with said blade so that a continuous length of sheet



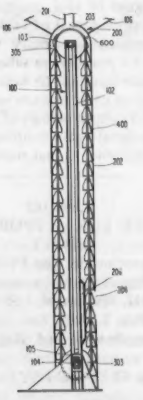
can be drawn from the dispenser said housing including an upper outlet member and a lower outlet member which are spaced apart to define said opening, said blade being connected to the upper outlet member, and means for pivoting said discharge member with respect to the housing, whereby said discharge member can be pivoted between said controlled feed position and said continuous feed position.

4,358,170

GROUP STORAGE TOWER FOR STORING STACKS, GROUPS OF ELEMENTS OR PASTED BATTERY PLATES IN A DUST-FREE MANNER

William J. Eberle, Reading, Pa., and Harry M. Channing, South Lake Tahoe, Calif., assignors to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 59,501, Jul. 23, 1979, abandoned. This application Dec. 10, 1979, Ser. No. 101,908
Int. Cl.³ F26B *13/10*; A47B *77/08*
U.S. Cl. 312—268 **17 Claims**



1. A dust-confining storage apparatus for storing a plurality of stacks of battery plates, said apparatus comprising:
(a) frame means for providing a vertical support;
(b) storage means mounted and vertically rotatable about said frame means for holding said battery plates therein;
(c) hood means

comprising a vertical cover surrounding said frame means and said storage means,

said cover having a first opening in the top thereof which is adapted to be connected to an exhaust system, and further having a second opening in the side thereof through which battery plates can be inserted into said storage means within said cover,

wherein said cover further includes a hatch at the bottom thereof for access into the bottom interior of said cover;

(d) air flow means;

(e) means for selectively activating said air flow means to direct air against said vertically rotatable storage means upon reaching a specified location in the vicinity of said exhaust;

(f) said selective supplying of air flow being directed against said storage means for removing lead-oxide dust therefrom to allow said dust to be safely removed into said exhaust; and

(g) heavier lead-oxide dust particles which cannot be removed by said exhaust dropping to the ground within said vertical cover such that said particles can be easily removed through said hatch.

4,358,171

INSTALLATION COMPRISING AN ICE-BOX FOR A HOTEL ROOM

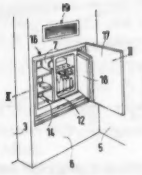
Jean-Louis Christen, Geneva, Switzerland, assignor to Societe pour l'Exploitation de l'Hotel du Rhone, Geneva, Switzerland

Filed May 27, 1980, Ser. No. 153,499

Claims priority, application Switzerland, Jun. 1, 1979, 5135/79

Int. Cl.³ A47B *46/00*

U.S. Cl. 312—286 **7 Claims**



1. An installation for a hotel room with a wall separating the room from an adjoining management space, said room being one of two adjoining rooms and there being a separating wall between the two adjoining rooms, said installation comprising:

a movable frame disposed at an opening provided in said wall separating the room from an adjoining management space and in line with said separating wall, the frame carrying two ice-boxes which are disposed in head-to-foot arrangement, said ice-boxes having doors which respectively open on the two opposite sides of the frame, said frame being slidably arranged so that it can be located, at least partially, on either side of said wall separating the room from an adjoining management space so that when the frame is situated inwardly with respect to the rooms, one of said ice-boxes is accessible from one of the rooms and the other of said ice-boxes is accessible from the other of the rooms and when said frame is located on the other side of said wall separating the room from a management space, both of the ice-boxes are accessible from the management space.

4,358,172

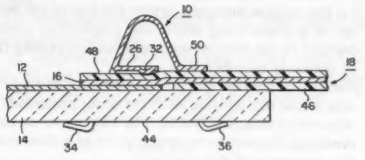
CONNECTOR FOR ELECTRICAL INTERCONNECTION OF CIRCUIT BOARD AND FLAT MULTICONDUCTOR CABLE

Ronald S. Narozny, Panorama City, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Apr. 23, 1980, Ser. No. 143,002

Int. Cl.³ H01R *9/07*

U.S. Cl. 339—17 F **20 Claims**



11. An integrally formed electrical connector, comprising:

an elongate member of resilient material having a pair of longitudinally extending leg portions connected to and diverging from a central joining portion, such that said leg portion and said central portion define a structure having a substantially U-shaped cross-section;

a foot portion at the distal end of each leg portion, said foot portions extending outwardly from the surface of said leg portions and extending a portion of the longitudinal extent of said leg portions;

a plurality of cantilevered spring members spaced lengthwise along one of said leg portions between said foot portion and said joining portion, each spring member extending transversely from said one leg portion inwardly in a direction toward said other leg portion; and

a cantilevered member extending lengthwise along and outwardly from the other leg portion, substantially opposite said spring members, and being disposed a predetermined relative distance from said foot portions forming thereby a support space therebetween.

4,358,173

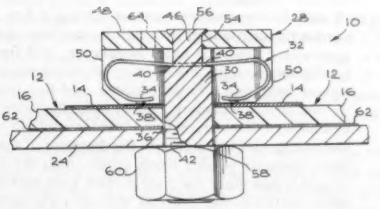
ELECTRICAL CONNECTOR FOR LEADLESS INTEGRATED CIRCUIT PACKAGES

Richard A. Conrad, Vista, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Aug. 8, 1980, Ser. No. 176,538

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—17 CF **3 Claims**



1. A connector for making electrical connections to leadless integrated circuit packages comprising:

a bar shaped body member having a planar bottom surface;

means for fastening the bottom surface of the body member to a mounting surface;

a plurality of resilient electrically conductive contacts, each having a central portion and a first and a second free end;

means for attaching the central portion of each of the contacts to the body member in a plane lying above the

bottom surface of the body member, each contact being parallel spaced apart from the adjacent contact along the length of the body member with the free ends of each contact projecting from the respective sides of the body member;

means for positioning the first free end of each of the contacts so that the distance between the first free end and the bottom surface of the body member of the connector is less than the distance between the conductive pads of the leadless integrated circuit package and the mounting surface of that package;

a flat top section mounted across the top of the body member in a plane lying above the conductive contacts, and parallel to the bottom surface of and extending the length of the body member; and

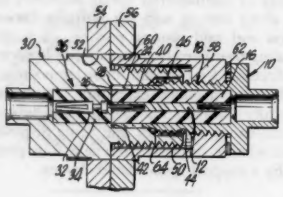
a plurality of parallel spaced apart ribs depending from each side of the top section, each rib being positioned between adjacent contacts whereby the ribs serve as electrically insulating barriers between contacts as well as maintaining the alignment of the contacts.

4,358,174

INTERCONNECTED ASSEMBLY OF AN ARRAY OF HIGH FREQUENCY COAXIAL CONNECTORS

Charles W. Dreyer, Fairfield, Conn., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,004
Int. Cl.³ H01R *17/18, 21/28*
U.S. Cl. 339—64 M **9 Claims**



1. An interconnected assembly of an array of high frequency coaxial connectors capable of operation at frequencies on the order of 18 Ghz comprising:

a pair of opposed planar mounting plates, each plate having an array of closely spaced apertures with the respective apertures in said plates being aligned to define opposed pairs; and

a plurality of coaxial electrical connectors respectively mounted in said apertures to define opposed mating pairs, each mating pair of connectors including first and second connector members;

each said first connector member having a first central conductor surrounded by a tubular insulator and a first generally cylindrical outer conductor, said first outer conductor having a minor inner diameter portion contiguous with said tubular insulator, said first outer conductor further including a major inner diameter portion extending axially beyond said tubular insulator towards the mating end thereof, with the diameter of said major inner diameter portion being greater than the diameter of said minor inner diameter portion such that the transition between said portions defines a circumferential step extending transverse to the longitudinal axis of said first connector member;

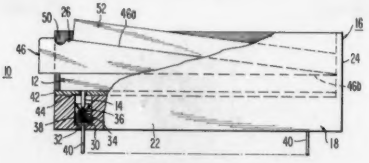
each said second connector member having a second central conductor surrounded by a tubular insulator and a second generally cylindrical outer conductor, with the mating end of said second outer conductor including a plurality of longitudinal slits and with said second outer conductor being flared radially outwardly towards the mating end thereof to define a plurality of cantilevered spring fingers, with the diameter of the mating end of said second outer conductor being greater than the inner diameter of said major inner diameter portion of said first outer conductor when said spring fingers are flared radially outwardly, said spring fingers being radially compressible against said tubular insulator to define a cylinder having a constant diameter along substantially its entire length equal to the inner diameter of said major inner diameter portion of said first outer conductor, the mating end of each said cantilevered spring finger of said second connector members being chamfered to facilitate its radial compression during mating, and the mating end of each said cantilevered spring finger further including a flattened portion disposed transverse to the longitudinal axis of said second connector member, said opposed mounting plates being disposed such that said connector members are mated to interconnect the respective first and second central conductors and with said spring fingers being radially compressed within the major inner diameter portion of said first outer conductor such that said radially compressed fingers form a mechanical connection between said first and second connector members and frictionally hold said first and second connector members of said array in a high frequency electrical connection, and with the flattened portion of the mating end of said spring fingers abutting against said circumferential step of said first connector thereby establishing a redundant interconnection between said first and second outer conductors.

4,358,175

CONNECTOR FOR PIN TYPE INTEGRATED CIRCUIT PACKAGES

Gilbert R. Reid, Norristown, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 3, 1980, Ser. No. 202,918
Int. Cl.³ H01R *23/72*
U.S. Cl. 339—75 M **9 Claims**



1. A low insertion force connector for receiving the interface pins of an integrated circuit package comprising:

a plurality of electrical contacts, each contact comprising a longitudinal assembly of a pin-receiving cup, a spring member and a tail section, said pin-receiving cup being supported by said spring member at one extremity of the latter, and said tail section being disposed at the opposite extremity of said spring member,

a connector body including a base having an inner and an outer planar surface, said inner surface of said base having a plurality of cavities for receiving respectively said plurality of electrical contacts, said outer surface of said base having a plurality of apertures leading into said cavities, said apertures permitting said tail section of said electrical contacts to penetrate said base and to be accessible for electrical interconnections external to said connector,

a cover disposed on said inner surface of said base for retaining said electrical contacts in said cavities, said cover having a plurality of openings homologously arranged with respect to said cavities for permitting said interface pins to engage said pin-receiving cups, and

means for applying a force to the outer surface of said inte-

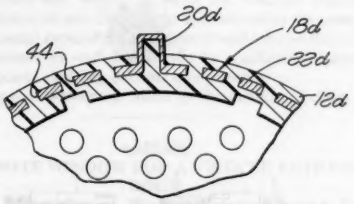
grated circuit package subsequent to the registration of said interface pins in said openings of said cover for causing said pins to compress the spring members of said contact elements, thereby seating said integrated circuit package in said connector and insuring adequate electrical continuity therebetween.

4,358,176

BAYONET COUPLING FOR ELECTRICAL CONNECTOR

Bruce K. Arnold, El Toro, and Lawrence Schwartz, Huntington Beach, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,351
Int. Cl.³ H01R *13/32*
U.S. Cl. 339—88 R **2 Claims**



1. An electrical connector member adapted to mate with a second connector member having a bayonet coupling nut thereon comprising:

a cylindrical insulative body having a forward mating end;

an annular metal band having inner and outer cylindrical surfaces, substantially all of said band being embedded in said body adjacent to said forward mating end so that the material of said body covers said inner and outer surfaces;

said band embodying at least one outwardly extending metal bayonet pin protruding beyond the outer surface of said body;

said band having openings therethrough spaced circumferentially from said bayonet pin and filled with the material of said body for restricting said band from movement rotationally and axially relative to said body, and

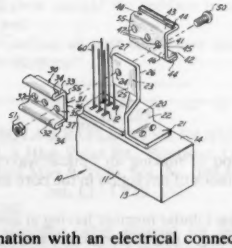
said band being cylindrical along its entire longitudinal extent, except for said bayonet pin, so that the thickness of said cylindrical body may be maintained at a minimum.

4,358,177

STRAIN RELIEF CLAMP AND ASSEMBLY

James A. Badolato, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 19, 1980, Ser. No. 160,898
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **2 Claims**



1. In combination with an electrical connector of the type including a housing having a mating face and a wire entry face, a plurality of mateable electrical contacts disposed in an array in the housing and a plurality of conductive wires terminating at respective contacts proximate the wire entry face, improved strain relief comprising:

restraining means for securing an axial portion of the terminated wires in a transverse spaced apart relationship to the connector housing, the restraining means comprising:

a generally cylindrical tube shaped member;

a pair of U-shaped channels, each of said channels including a medial bight portion and a pair of upstanding webs, said tube being captivated by said channels such that some of the wires are directed around one side of the tube and other of the wires are directed around the other side of the tube; and

means for compressively mounting said tube within said U-shaped channels; and

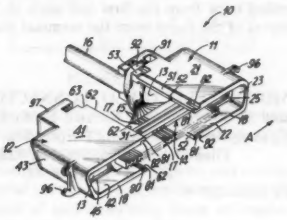
means for supporting said restraining means axially rearwardly of said wire entry face whereby axial and lateral loads placed on wire terminations are eliminated.

4,358,178

HOOD FOR MULTICONTACT CONNECTOR

Rodney J. Guy, Boulder, Colo., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,425
Int. Cl.³ H01R *13/506*
U.S. Cl. 339—103 R **2 Claims**



1. A protective hood for mounting and enclosing a connector terminal plug which terminates an electrical cable on a back end of the plug and which has a flange member, the hood being arranged to be easily mounted on and removed from the terminal plug, comprising:

(a) a pair of substantially indentical half-shells, each half-shell comprising:

(1) a hood portion having a connector plug opening at one end defined by walls for partially enclosing a portion of the connector plug;

(2) longitudinal channels formed along the inner surfaces of the walls of the shells for receiving the flange member of the plug so as to mount the plug in a predetermined position within the shell; and

(3) protection means extending from the walls in a perpendicular direction away from the channels formed in the walls a sufficient distance to form a lower edge of the half-shell for protecting a portion of a front end of the terminal plug when the plug is mounted in the channels;

(b) resiliently engaging means located on the first half-shell comprising:

(1) lips extending along the edges of the walls of the half-shell which edges face the second half-shell when each half-shell has the plug mounted in the channels of the half-shell, the lips being formed by removing a portion of the outer surface of the wall at each of the edges; and

(2) tangs and slots formed along the edges of the protection means of the half-shell between the lower edge of the half-shell and the channels, the tangs and slots facing toward the outer surface of the protective means; and

(c) complimentary resiliently engaging means located on the second half-shell for accepting the resiliently engaging

means of the first half-shell so as to easily snap fasten the half-shells together comprising:

(1) lips extending along the edges of the walls of the second half-shell which edges face the first half-shell, the lips being formed by removing a portion of the inner surface of the walls at each of the edges; and

(2) tangs and slots formed along the edges of the protection means between the lower edge of the second half-shell and the channels, the tangs and slots facing toward the inner surface of the protection means and arranged such that the slots are positioned in the second half-shell to receive the tangs of the first half-shell and the tangs are positioned in the second half-shell to fit into the slots of the first half-shell;

such that when the first half-shell and second half-shell are mounted on the flange of the terminal plug and brought into contact with each other, the lips located on the edges of each half-shell slide along and overlap each other and the tangs and slots of each half-shell are engaged and easily snap into locking relationship with each other to form a nonbulging seam between the half-shells; and

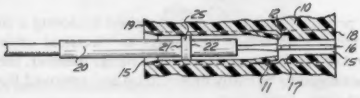
such that when the first and second half-shells are locked together, pressure applied to the first half-shell at points located just above the lower edge of the protection means and adjacent to the tangs and slots, and applied in directions so as to pinch the protection means together will disengage the tangs from the associated slots in the protection means to allow the second half-shell to be easily pulled back from the first half-shell to facilitate easy removal of the hood from the terminal plug.

4,358,179

MOLDED ELECTRICAL CONNECTOR INSERT

Normand C. Bourdon, and Richard Sanford, both of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 1, 1976, Ser. No. 728,821
Int. Cl.³ H01R *4/48*
U.S. Cl. 339—217 S **2 Claims**



1. An electrical connector insert for receiving and retaining a plurality of elongated electrical contacts, each contact having an enlarged section defining two shoulders that face in opposite directions, said insert comprising:

a single piece unitary body of molded dielectric material having a plurality of passages therethrough from a front face to a rear face, each passage adapted to receive a respective electrical contact therein which is insertable from the rear face of said insert, each passage including:

a plurality of ribs integral with said body in a passage wall, each of said ribs terminating in a rearwardly facing shoulder adapted to engage one of said contact shoulders when said contact is inserted into said insert from the rear face, at least one said ribs mounted to the insert and also to an adjacent rib by a ring-portion of molded dielectric material which is integral with the body; and

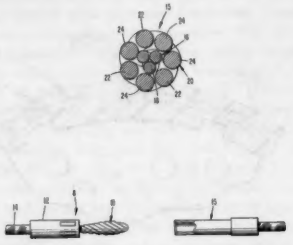
a truncated tubular contact retention cone integral with said body and located coaxially within said passage, said cone tapering forwardly and radially inwardly from the wall of said passage to a forward free end which terminates a predetermined distance from said rib shoulders, said free end adapted to engage the other of said contact shoulders when said contact is inserted into said insert from the rear face, said cone being resiliently radially expandable to permit the enlarged section of a contact to pass therethrough upon insertion of the contact into said passage, said cone contracting behind the other of said contact shoulders to limit rearward movement of the contact in the passage, said cone being substantially rigid in an axial direction when it its contracted position so as to provide positive stop against rearward movement of an electrical contact, whereby the enlarged portion of a contact inserted into said passage is captivated between the free end of said retention cone and the shoulders of said ribs.

4,358,180

TWIST PIN

Thomas C. Lincoln, South Pasadena, Calif., assignor to Malco, South Pasadena, Calif.

Filed Mar. 9, 1981, Ser. No. 241,547
Int. Cl.³ H01R *13/06*
U.S. Cl. 339—252 R **15 Claims**



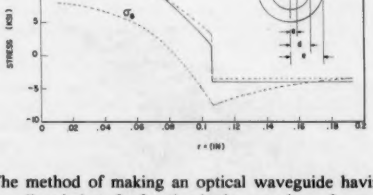
1. A pin element for use in a multiple pin electrical connector which is mateable with a multiple socket electrical connector, said pin element comprising an inner conductive portion, and an outer conductive portion including a cluster of outer wires helically wound around said inner conductive portion for frictionally engaging a socket of the socket connector; said cluster of outer wires comprising a combination of wires having different degrees of resiliency.

4,358,181

GRADIENT INDEX OPTICAL WAVEGUIDE AND METHOD OF MAKING

Suresh T. Gulati, Elmira, and George W. Scherer, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 837,927, Sep. 29, 1977, abandoned. This application Jul. 24, 1980, Ser. No. 171,958
Int. Cl.³ C03B *37/07, 37/075*
U.S. Cl. 350—96.31 **9 Claims**



1. The method of making an optical waveguide having a radial gradient index of refraction in the core thereof, comprising:

forming a glass tubular member having at least three constituents including a silicon compound and dopants, a first of said constituents being a dopant which produces glass having a changing refractive index and thermal expansion coefficient with variations in concentration, a second of

said constituents being a dopant producing changing thermal expansion coefficient with variations in concentration;

radially changing the concentration of said first of said constituents while forming to produce a radially varying index of refraction;

changing the concentration of said second of said constituents radially while forming to maintain the thermal expansion coefficient substantially constant throughout said radial gradient of said tubular member;

coating said tubular member with a layer of cladding glass having an index of refraction less than that of the core formed by the preceding steps;

and

adding to the composition of said cladding layer a constituent producing substantially no increase in the index of refraction and which increases the thermal expansion coefficient of said cladding to approximately the composite thermal expansion coefficient of said core so that residual stresses in said core caused by a different expansion coefficient cladding become compressive.

9. An optical waveguide made by the method of claim 1.

4,358,182

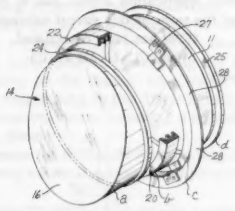
COMPOSITE WINDOW FOR A VEHICLE ENTRANCE DOOR

Robert B. Hayes, Everett, Wash., and Arturo Pompei, Turin, Italy, assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 3, 1981, Ser. No. 270,074

Int. Cl.³ G02B *7/18*; B64C *1/14*

U.S. Cl. 350—287 **5 Claims**



1. A composite window for an entrance door of an airplane including at least one substantially air-tight door comprising:

a. an outer pane of a transparent material and having two substantially parallel plane surfaces;

b. an inner pane of a transparent material, said inner pane having a first surface facing said outer pane and spaced from said outer pane and being shaped to provide a concave negative lens having substantially the same area as said inner pane, and said inner pane having an opposite surface, at least a portion thereof forming a prism oriented to afford a view outside the airplane in a predetermined direction; and

c. means for sealing at least said outer pane substantially air-tight to the door.

4,358,183

SOLAR REFLECTING PANEL

Carl Whiteford, 3 High Point Rd., Westport, Conn. 06880

Filed May 9, 1980, Ser. No. 148,419

Int. Cl.³ C02B *5/08*

U.S. Cl. 350—288 **25 Claims**

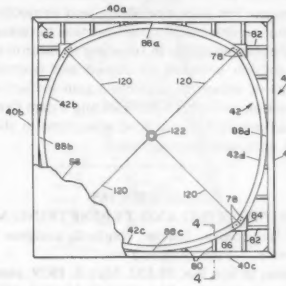
1. A solar reflecting panel adapted for use with various apparatus for concentrating solar radiation on a close range or distant receiver to produce high temperatures thereat, the apparatus having means for supporting said solar reflecting panel and for moving it independently in both azimuth and elevation so that it reflects the rays of the sun to the receiver, said solar reflecting panel comprising:

A. a reflecting member formed as a very thin, relatively large area and relatively flexible sheet of base material, said reflecting member presenting a highly specular surface to the rays of the sun, and

B. a tensioning frame for supporting said reflecting member, said tensioning frame having

1. an outer frame member which is dimensioned to be substantially coextensive with the peripheral portion of said reflecting member and to which said reflecting member is connected,

2. an inner frame member capable of withstanding high compressive stress directed generally radially inwardly,



3. means for connecting preselected peripheral portions of said reflecting member to corresponding peripheral portions of said tensioning frame, and

4. means for imposing sufficient stress on said corresponding peripheral portions of said tensioning frame to cause said portions of said tensioning frame to impose high linear tensile strain on said reflecting member so that said tensioning frame maintains said reflecting member in a substantially planar and highly tensioned condition, said means comprising means for forcibly urging said outer frame member away from said inner frame member against the resistance of said reflecting member whereby said reflecting member is placed in said substantially planar and highly tensioned condition.

4,358,184

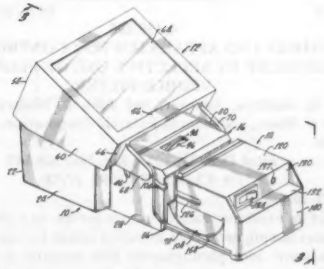
COMPACT COLLAPSIBLE MICROFORM VIEWER

Detlef E. Schmidt, Malibu, Calif., assignor to Topper Manufacturing Corporation, Torrance, Calif.

Filed Feb. 24, 1981, Ser. No. 237,688

Int. Cl.³ G03B *23/08*, *21/22*

U.S. Cl. 353—119 **20 Claims**



1. A microform viewer comprising

a case section,

a projection section telescopically associated with said case section and slidably mounted thereto for motion between a closed position in which at least a portion of the projection section is telescoped within said case section and an operative position in which at least part of the projection section is displaced from the case section, said projection section including means for positioning film bearing an image to be projected, means for illuminating such film, and means for projecting an image of said illuminated film,

a screen section pivotally connected to said case section for movement between a retracted position adjacent said case section and a display position displaced therefrom, said screen section including a display screen,

means in said case section for reflecting light from said projection section to said screen, and

drive means for interconnecting said projection and screen sections to drive said screen section between its retracted and display positions in response to motion of said projection section between its closed and operative positions, said drive means comprising a cam surface on one of said projection and screen sections and a cam fixed to the other of said projection and screen sections in slidable engagement with said cam surface.

4,358,185

OPTICAL PRINTING AND TYPESETTING MACHINERY

Peter H. Nancarrow, Girton, England, assignor to Rachel M. Nancarrow, Girton, England

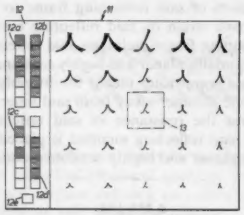
Continuation of Ser. No. 39,132, May 5, 1979, abandoned, which is a continuation of Ser. No. 664,686, Mar. 8, 1976, abandoned.

This application Aug. 18, 1981, Ser. No. 294,008

Claims priority, application United Kingdom, Mar. 11, 1975, 10024/75; Oct. 7, 1975, 40902/75

Int. Cl.³ B41B *17/00*

U.S. Cl. 354—13 **21 Claims**



1. A character matrix for an optical printing or typesetting machine which matrix comprises a plurality of holograms each of which stores an image containing print symbols and control signals.

4,358,186

METHOD AND APPARATUS FOR CONTROLLING EXPOSURE BY SELECTIVE USE OF BLOCKING VISIBLE FILTER

Bruce K. Johnson, Andover, and John B. Millard, Cohasset, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

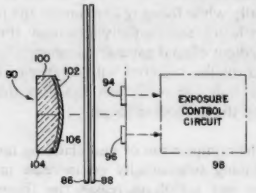
Filed Dec. 31, 1979, Ser. No. 108,547

Int. Cl.³ G03B *7/099, 11/00*

U.S. Cl. 354—27 **16 Claims**

15. In an exposure control system for use in a photographic apparatus having means for directing image forming light rays from a scene to a photographic film material mounted at a given focal plane, means for unblocking and blocking passage of the image forming rays to said focal plane, means for evaluating radiation from said scene during an evaluation period, and means responsive to said evaluation means for controlling the unblocking and blocking means to provide an exposure interval, the improvement wherein:

the evaluation means includes means for substantially evaluating spectral frequencies of scene radiation along a first path so as to substantially exclude visible spectral frequencies during at least one portion of the evaluation period, and said evaluation means includes means for evaluating essentially only said visible spectral frequencies along a second path during another portion of the evaluation period.



4,358,187

AUTOMATIC-LIGHT CONTROL ELECTRONIC FLASH DEVICE FOR USE IN AUTOMATIC EXPOSURE CAMERA

Isao Kondo, and Yukio Nakajima, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 53,284, Jun. 29, 1979, Pat. No. 4,268,140.

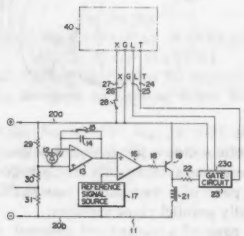
This application Dec. 11, 1980, Ser. No. 215,254

Claims priority, application Japan, Jul. 6, 1978, 53-82240

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—33 **4 Claims**



1. An automatic light control electronic flash device for use in automatic exposure camera including a shutter speed set circuit for setting a shutter speed in accordance with an amount of light incident onto a camera to produce a shutter control signal, said shutter speed set circuit including an integrating circuit having a light sensing element for receiving the light incident onto a camera when a shutter is actuated to produce an integrated output signal in accordance with the amount of the incident light, and a comparing circuit for comparing the integrated output signal produced from said integrating circuit with a reference signal, a switching circuit operating in response to a shutter control signal produced by said shutter speed set circuit, an electromagnetic device which is connected to said switching circuit to operate in response to the operation of said switching circuit to drive a shutter mechanism, light control signal producing means for producing a light control signal in response to the shutter control signal, a gate circuit having an input terminal connected to said light control signal producing means and an output terminal, said automatic light control electronic flash device comprising a

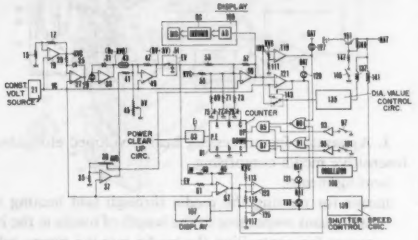
main capacitor, a flash tube connected to said main capacitor, means for applying a gate signal to said gate circuit of said camera to open said gate, means for flashing said flash tube in response to a trigger signal, and a light control circuit connected to the output terminal of said gate circuit for terminating the flashing of said flash tube in response to the light control signal from said light control signal producing means through said gate circuit.

4,358,188

CAMERA HAVING PROGRAM SHUTTER

Masanori Uchidoi, and Tadashi Ito, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1979, Ser. No. 39,388
Claims priority, application Japan, May 19, 1978, 53-60430
Int. Cl.³ G03B *7/087, 7/089, 7/097, 17/18*
U.S. Cl. 354—38 **13 Claims**



7. A single lens reflex camera comprising:

(a) a light sensitive circuit for producing an output signal corresponding to an exposure value Ev;

(b) a computing circuit responsive to the output signal for computing a combination of shutter time value and a diaphragm value and for producing an output voltage corresponding to the shutter time value and an output voltage corresponding to the diaphragm value;

(c) shift information means including a plurality of resistors;

(d) operating means;

(e) counter means for performing a counting operation when said operating means is actuated and producing a constant value;

(f) a connecting circuit for sequentially connecting the resistors to said computing circuit with the counting operation of the counter means, so that said computing circuit shifts an output voltage of the computing circuit corresponding to the connected resistance value;

(g) holding means for maintaining the output voltage of the computing circuit; and

(h) an exposure control circuit for controlling the diaphragm and shutter time on the basis of the output voltage as maintained by the holding means.

4,358,189

PHOTOMETRIC SENSING MODULE

John P. Nylander, 421 Niagara St., Denver, Colo. 80220

Continuation of Ser. No. 931,237, Jul. 3, 1978, abandoned. This application Jun. 17, 1980, Ser. No. 160,274
Int. Cl.³ G03B *29/00*
U.S. Cl. 354—81 **11 Claims**

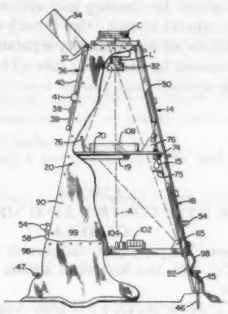
1. A photometric sensing module comprising:

a portable rigid frame having a camera mount and a plurality of legs diverging away from said camera mount in equally spaced relation to one another such that the divergent ends of said legs are adapted to rest upon a subject plane which is to be photographed, and connecting means in the form of an open frame which provides a free unobstructed view of said subject plane while rigidly interconnecting said legs in equally spaced relation to one another, at least one of said legs being adjustable in length, said connecting means disposed intermediately between said camera mount and said subject plane and defining the angle of view of said camera lens while cooperating with said enclosure means to exclude said camera lens from direct exposure to artificial light within said enclosure means,

an artificial light source mounted within said frame,

a camera mounted on said camera mount provided with a lens having its optical axis substantially coinciding with the longitudinal axis through said frame equidistant from said legs,

enclosure means fully enclosing said frame and said camera lens from direct exposure to external light, said enclosure means provided with an internal light diffusing surface



whereby to diffuse the light from said light source evenly over a subject plane upon which the outer divergent ends of said legs rest,

fiducial marker means adjacent to the outer divergent end of each leg and located at predetermined, equal distances from said camera mount to represent the outer peripheral limits of each grid segment to be photographed, said fiducial marker means being arranged such that the image of said fiducial marker means is within the field of view of said camera, and

means for reflecting each said image onto the camera lens to represent the location of each respective outer divergent end of a leg on the photographic image of the subject plane being photographed.

4,358,190

FOCUSSING APPARATUS HAVING BLURRING INDICATOR

Yutaka Sakai, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiyo, Japan

Filed Sep. 16, 1981, Ser. No. 302,762
Claims priority, application Japan, Sep. 16, 1980, 55-130346[U]
Int. Cl.³ G03B *13/16, 13/18*
U.S. Cl. 354—198 **5 Claims**

1. A focussing apparatus for a camera having a taking lens

and a viewfinder, for focussing an image in a predetermined plane and indicating the degree of sharpness of the image produced by said taking lens, said focussing apparatus comprising position detecting means for detecting the position of said taking lens and for generating an electric signal corresponding to the position detected, distance measuring means for measuring the distance to an object to be photographed and for generating an electric signal corresponding to the object distance measured thereby, signal processing means for generating an output signal corresponding to the difference between said electric signals from said detecting means and distance measuring means, a pair of lenses comprising a concave lens and a convex lens disposed in the optical path of said viewfinder and having when in contact with each other no refracting power, and driving means for causing said concave and/or convex lenses to shift relative to each other in such a way said concave and convex lenses are automatically separated from each other the image produced by said taking lens is blurred, whereby the image visible through said pair of lenses is correspondingly blurred.

4,358,191

EXPOSURE RATE CONTROLLING MECHANISM FOR CAMERA

Yasuo Ishiguro, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd. and Kabushiki Kaisha Copal, both of Tokyo, Japan

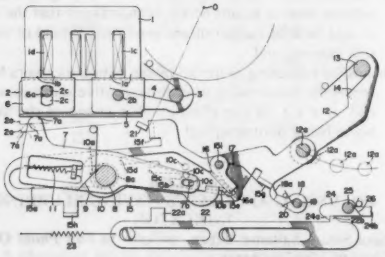
PCT No. PCT/JP80/00315, § 371 Date Aug. 10, 1981, § 102(e) Date Aug. 10, 1981, PCT Pub. No. WO81/01885, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 19, 1980, Ser. No. 293,206

Claims priority, application Japan, Dec. 20, 1979, 54-177221[U]

Int. Cl.³ G03B 9/02, 7/08

U.S. Cl. 354—271 **5 Claims**



2. In an exposure rate controlling mechanism for a camera wherein the fixing position of an exposure rate controlling member **7** is determined in correspondence with a plurality of displaced positions of a magnetizable means **5**, **6** which can be released from a fully attracted position near an electromagnet **1** to another position corresponding to the brightness of an object field after being fully attracted to the electromagnet **1**, so that the exposure rate is controlled, the improvement in which an exposure rate determining member **15** is provided and the exposure rate controlling member **7** and the exposure rate determining member **15** are engaged with each other in a set state so that the exposure rate controlling member **7** is held in a position wherein the magnetizable means **5**, **6** make press contact with said electromagnet **1**; and the exposure rate control member **7** and said exposure rate determining member **15** are engaged with each other at different positions corresponding to the displaced positions of said exposure rate controlling member **7**.

4,358,192

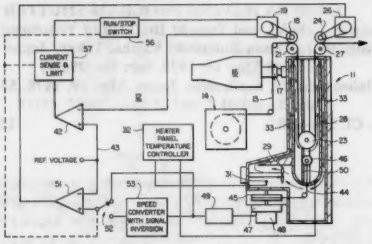
APPARATUS AND METHOD FOR PROCESSING HEAT DEVELOPED PHOTOSENSITIVE RECORDING MATERIAL

Paul R. Goldberg, Palo Alto, and Colin J. Doward, Los Altos, both of Calif., assignors to Wavetek Indiana, Inc., Mountain View, Calif.

Filed Aug. 14, 1980, Ser. No. 177,880

Int. Cl.³ G03D 7/00

U.S. Cl. 354—299 **19 Claims**



1. Apparatus for processing heat developed elongated photosensitive media comprising

heating means;

means for moving the media through said heating means; and means responsive to the length of media in the heating means for controlling the media moving means whereby the media is exposed to the heating means a predetermined time regardless of speed of movement of the media through the heating means.

4,358,193

DIAZO DEVELOPMENT APPARATUS

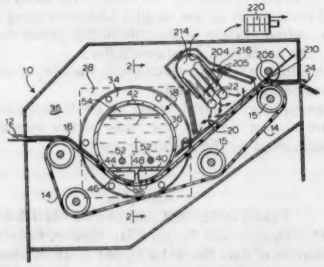
Joseph F. Hale, Ashford, England, assignor to GAF Corporation, New York, N.Y.

Filed Oct. 9, 1980, Ser. No. 195,546

Claims priority, application United Kingdom, Nov. 9, 1979, 7938936

Int. Cl.³ G03D 7/00

U.S. Cl. 354—299 **2 Claims**

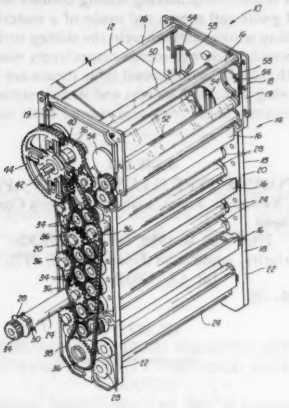


1. A developing apparatus for photocopy machines comprising, in combination, a developing chamber, means for transporting sensitized paper through the developing chamber, means for introducing developing medium into said developing chamber in controlled amounts, pressure activated control means for regulating the means for introducing developing medium into said developing chamber and heating and suction means to expunge developing medium from the sensitized paper subsequent to said paper exiting the developing chamber.

4,358,194
TRANSPORT FOR DEVELOPING FILM IN A PHOTOGRAPHIC FILM PROCESSOR

V. Dwight Krehbiel, Wichita, Kans., assignor to Kreonite Inc., Wichita, Kans.

Filed Jul. 29, 1981, Ser. No. 287,918
Int. Cl.³ G03D *3/08*
U.S. Cl. 354—320 **11 Claims**



1. A transport for developing film in a photographic film processor, the transport received in a tank having film processing liquids therein, the transport comprising:

a transport housing having a pair of end plates joined together in a spaced relationship by tie rods;

a plurality of rollers, the opposite ends of the rollers rotatably mounted on removable bearings, the bearings received in a press-fit in apertures in the sides of the end plates, the diameter of the apertures greater than the outer diameter of the rollers so that when the bearings are removed from the apertures, the rollers can be slidably received through the apertures without removing the end plates from the tie rods, the rollers disposed in a spaced relationship to each other for receiving the film therebetween and guiding the film downwardly along one side of the tank and upwardly along the opposite side of the tank; and

means for rotating the rollers on the housing.

4,358,195
ELECTROPHOTOGRAPHIC COLOR PROOFING APPARATUS

Manfred R. Kuehnle, New London, N.H.; Gordon Orme, Concord, and Joseph L. Brophy, Marblehead, both of Miss., assignors to Coulter Systems Corporation, Bedford, Mass.

Filed Apr. 11, 1980, Ser. No. 139,459
Int. Cl.³ G03G *15/01;* **G03B** *27/04, 27/52*
U.S. Cl. 355—4 **53 Claims**

1. Apparatus for forming color proof copies from a color separated positive transparency comprising:

means for carrying a color separated positive transparency,

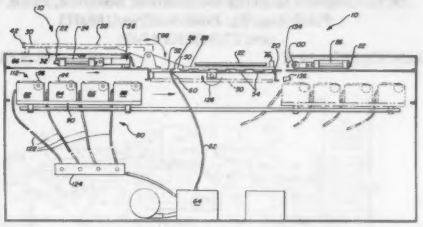
platen means for mounting an electrophotographic member carrying a photoconductive coating on the surface thereof,

charging means for applying a charge potential on said photoconductive coating surface, said charging means comprising a corona charging device arranged adjacent said platen means for selective translation relative the photoconductive coating of said electrophotographic member,

means for placing said positive transparency and charged photoconductive surface in intimate engagement,

means for exposing said engaged transparency and photoconductive surface to a suitable amount of radiant energy from a source thereof to gorm a latent electrostatic image of the pattern carried by said transparency,

means for separating the exposed photoconductive coating and transparency without any static electricity discharge,



means for developing said resulting latent electrostatic image with a selected one of plural color subtractive primary color toners,

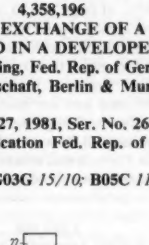
means for applying a transfer medium to said developed image and

means for transferring said developed image to said transfer medium.

4,358,196
DEVICE FOR THE EXCHANGE OF A DEVELOPER MEDIUM FOUND IN A DEVELOPER STATION

Hubert Mugrauer, Poering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 27, 1981, Ser. No. 267,663
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3025103
Int. Cl.³ G03G *15/10;* **B05C** *11/00*
U.S. Cl. 355—10 **7 Claims**



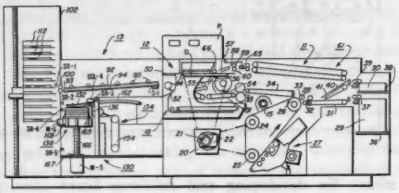
1. A developer exchange device located in a developer station of a printing or copying device, the developer being used for the development of charge images applied on an intermediate carrier, comprising: first and second dosing device means, the first of which constantly supplies fresh developer to the developer station and the second of which constantly removes used developer from the developer station in substantially the same quantity such that developer in the developer station has a substantially constant average service life.

4,358,197

VERY HIGH SPEED DUPLICATOR WITH LIMITLESS FINISHING FUNCTION

William P. Kukucka, Webster; Frank R. Hynes; Hugh L. Jones, both of Rochester, and David M. Thompson, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 21, 1980, Ser. No. 180,073
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 R 5 Claims



3. In a reproduction system for producing and collating copies from a set of document sheets of a multi-page document including an image processor for producing copy sheets and a finishing apparatus whereat copy sets of the document are collected and bound, the improvement comprising:

program means for presetting the number of copy sets of the document to be made by the processor during a reproduction run,

a first copy set receiving means arranged to collect a plurality of copy sets until a predetermined capacity of copy sets has been reached,

means for moving the copy sets from said first receiving means to a second copy set receiving means when said predetermined capacity has been attained to permit said first receiving means to collect additional copy sets,

control means responsive to said program means when preset for a number of copy sets greater than at said first and said second receiving means when both have attained said predetermined capacity to limit the number of copy sets made by the processor to no more than those copy sets already on said first and said second receiving means before further copy sets are made,

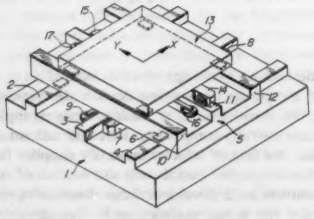
said first copy set receiving means including an elevator adapted to be moved downwardly as copy sets are collected in a pile thereon and means for sensing the height of the pile for controlling the downward movement.

4,358,198

APPARATUS FOR MOVING TABLE ON STAGE

Shigeo Moriyama, Hachioji; Tatsuo Harada, Fuchu, and Masaaki Ito, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 18, 1980, Ser. No. 188,511
Claims priority, application Japan, Sep. 19, 1979, 54-119422
Int. Cl.[3] G03B *27/42*
U.S. Cl. 355—53 7 Claims



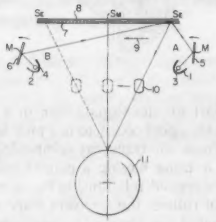
1. An apparatus for moving a table or a stage comprising: a base; first guide rail means laid on said base; first table means adapted to be guided by said first guide rail means slidingly and rectilinearly in a predetermined direction by said first guide rail means; second guide rail means laid on said first table means; and a second table means adapted to be guided slidingly and rectilinearly in the direction determined by said second guide rail means; wherein sliding parrts of said first and second table means respectively making sliding contact with said first and second guide rail means are made of a material having a self-lubricating nature, and wherein the sliding surfaces of said first and second guide rail means respectively making sliding contact with said first and second table means are formed of a material having a higher hardness and wear resistance than the material constituting said first and second table means.

4,358,199

SLIT-EXPOSURE TYPE ILLUMINATION APPARATUS

Koki Isago, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 4, 1980, Ser. No. 175,326
Claims priority, application Japan, Aug. 6, 1979, 54-100127
Int. Cl.[3] G03B *27/54*
U.S. Cl. 355—70 4 Claims



1. In an illumination apparatus for successively scanning elongate portions of a document with light, comprising at least one elongate light source each disposed near the focal line of a respective curved reflector, a planar reflector disposed adjacent each said light source for directing the light therefrom towards the document, and means for sweeping the light reflected from each said planar reflector across the document synchronously, the improvement wherein two planar side reflectors are disposed on the respective ends of each said light source, and a pair of auxiliary reflectors extending along the direction of scanning of said document on opposite sides thereof and each auxiliary reflector being essentially in the shape of a chevron with the peak thereof being located generally at the center of scanning of the document.

4,358,200

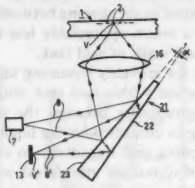
OPTICAL FOCUSSING-ERROR DETECTION SYSTEM

Jacobus P. J. Heemskerk; Hendrik Renes, and Carel A. J. Simons, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,732
Claims priority, application Netherlands, Sep. 28, 1979, 7907216
Int. Cl.[3] G01J *1/36*
U.S. Cl. 356—123 15 Claims

1. An optical system for detecting deviations between an image plane of an objective system and a reflective surface on which an image is to be formed by the objective system, said apparatus comprising means for producing a beam of radiation which is directed along a first path through the objective system and onto the reflective surface, at least a portion of said beam incident on said reflective surface being reflected thereby back through the objective system along a portion of said first path, means disposed in said portion of said first path for separating the reflected radiation from said beam passing along said

first path towards the reflective surface, said separating means including an optical element which both diverts said radiation reflected by said reflective surface along a second path different from said first path and introduces astigmatism solely in



said reflected radiation diverted along said second path, and radiation responsive means disposed in said second path for producing a signal indicative of the deviation between said image plane and said reflective surface.

4,358,201

INTERFEROMETRIC MEASUREMENT APPARATUS AND METHOD HAVING INCREASED MEASURING RANGE

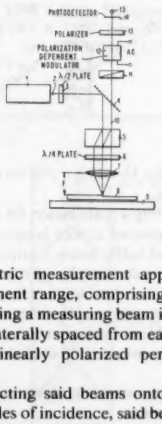
Günter Makosch, Sindelfingen, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 17, 1980, Ser. No. 160,247

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925117

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—351 **1 Claim**



1. Interferometric measurement apparatus having an increased measurement range, comprising:

means for splitting a measuring beam into two linearly polarized beams laterally spaced from each other, wherein said beams are linearly polarized perpendicularly to each other;

means for directing said beams onto an object surface at different angles of incidence, said beams thus experiencing a shift in phase with respect to each other which is a function of the topographic height variations of the object surface which is irradiated;

means for combining said beams after interaction with the object surface to produce a combined beam;

means (**12**) for periodically varying the phase relationship between said two beams; and

means (**13,14,15**) for sensing the amplitude of the component portion of the combined beam which is linearly polarized in a predetermined direction, wherein the amount of change in the phase relationship between said two beams caused by said phase varying means when said amplitude sensing means senses a maximum or minimum amplitude is a measure of the topographic height variations of the object surface which is irradiated.

4,358,202

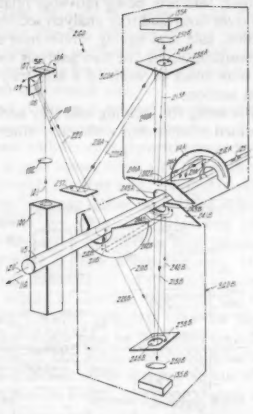
APPARATUS AND METHOD FOR MONITORING THE SURFACE CHARACTER OF CIRCULAR OBJECTS

Leroy G. Puffer, Vernon, and James P. Waters, Ellington, both of Conn., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Jul. 28, 1980, Ser. No. 172,738

Int. Cl.³ G01N *21/84*

U.S. Cl. 356—430 **20 Claims**



1. Apparatus for monitoring the surface character of an elongated generally circular test object, such as a coated cable, the test object being longitudinally movable along a path relative to said apparatus, said apparatus comprising:

an optical system having an apparent axis substantially coincident with the centerline of said test object path, said optical system comprising means for providing a source beam of electromagnetic radiation, means for rotating said beam about the apparent optical axis, means for dividing the rotating source beam into a plurality of beams, each beam of the plurality traversing an arc of predetermined angular extent about its own respective optical axis, at least one of said divided-beam axes differing from said apparent optical axis, the cumulative angle traversed by said plurality of divided beams being at least about 360°, means for directing each of said plurality of divided beams toward said apparent optical axis such that it is incident with and scans a respective arcuate segment of the 360° circumference of any said test object thereat, thereby avoiding interruption of said rotating beam by a test object on said object path and affording a scan of the entire 360° circumference of any said test object such that the beam is reflected by the scanned portion of the circumference of the surface of any said test object thereat, and means for detecting the beam reflected from said scanned portion of the circumference of the test object and providing electrical signals indicative of the intensity thereof; and

utilization means responsive to said electrical signals for providing an indication of the surface character of the test object.

4,358,203

APPARATUS FOR ANALYZING AND EVALUATING TESTS IN A PLURALITY OF WELLS

Paul S. Citrin, Danbury, Conn., assignor to Becton Dickinson and Company, Paramus, N.J.

Filed Dec. 10, 1980, Ser. No. 214,998

Int. Cl.³ C12Q *1/00*; G01D *9/00*

U.S. Cl. 356—432 **29 Claims**

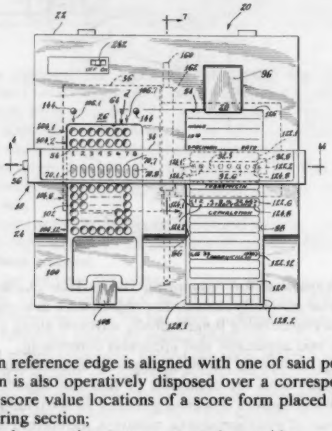
10. An apparatus for analyzing and evaluating tests made in

a plurality of wells located in a pattern of rows on a tray comprising:

a housing having a top surface defining a tray analysis section and a test scoring section, with said tray analysis section being shaped to receive said tray and said test scoring section being shaped to receive a score form having score value locations in corresponding spatial relationship with the location of wells on a tray;

an arm mounted to the housing and extending over said housing top surface, said arm being movable relative to the top surface and over both said tray analysis section and said test scoring section, said arm having a reference edge for alignment with positions along the tray analysis section in correspondence with rows of wells of a said tray placed in the tray analysis section;

means on said housing for locating said tray and score form in a predetermined relationship with each other so that when



said arm reference edge is aligned with one of said positons said arm is also operatively disposed over a corresponding row of score value locations of a score form placed in said test scoring section;

score signal generating means mounted on said arm and located to move over the tray analysis section in visual registration with wells in a tray for generating score signals individually associated with a well in a row of wells in a tray; and

means mounted to said arm and located thereon to move relative to the test scoring section for recording, in response to said score signals, notations on a said score form at score value locations corresponding to the wells in a row which is in alignment with said reference edge, whereby when said arm is moved across said housing upper surface an evaluation of the tests in the wells of a tray can be accurately and conveniently formed on said score form.

4,358,204

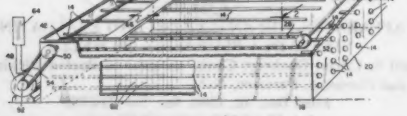
ULTRASONIC CLEANING APPARATUS

Sidney Ellner, R.F.D. #2, Bedford, N.Y. 10506

Filed Sep. 22, 1980, Ser. No. 189,136

Int. Cl.³ B08B *3/12*

U.S. Cl. 366—118 **8 Claims**



1. An ultrasonic cleaning assembly for cleaning elongated tubular lamps emitting ultraviolet radiation and disposed in horizontal rows immersed in liquid within a tank of an ultraviolet purification system, said tank having side walls and end walls, said cleaning assembly comprising,

a single elongated ultrasonic transducer having a length substantially equal to the spacing between the side walls of said tank and a width appreciably less than the distance between the end walls of said tank,

mounting means for movably mounting said transducer in a horizontal position within said tank with said transducer extending longitudinally between the side walls of said tank and being in contact with the liquid therein,

means for energizing said transducer to cause the latter to emit a beam of ultrasonic vibrational waves through the liquid in said tank,

and drive means for moving said transducer in its energized state within said tank in a direction to cause said beam to sweep substantially the entire inner area of said tank and to traverse all of the lamps within said tank.

4,358,205

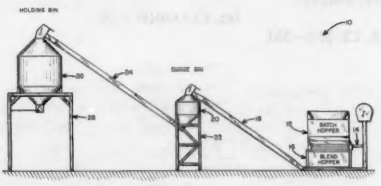
BLENDING SYSTEM

Raymond L. Eakins, 515 E. Broadway, Keota, Iowa 52248

Filed Mar. 13, 1981, Ser. No. 243,550

Int. Cl.³ B01F *5/24, 13/10*

U.S. Cl. 366—141 **4 Claims**



1. Blending system for blending a plurality of dry materials, said system comprising:

a. hopper means including a scale means for measuring weight of dry materials connected to said hopper means and three groups of longitudinal baffle means positioned in said hopper including first level substantially vertical baffles, second level vertical baffles and third level of inverted V members;

b. blend hopper means substantially aligned and below said hopper means, said blend hopper means including inwardly sloping sides and an inverted V-shaped baffle in a lower portion;

c. first conveyor means extending along and upwardly from said blend hopper means;

d. surge bin means including at least one ramped downward side positioned below said first conveyor means for eliminating any concentration of materials and including at least one baffle;

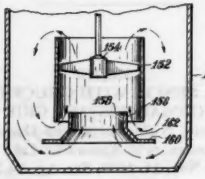
e. second conveyor means extending upwardly from said surge bin means; and,

f. holding bin means of a substantially rectangular cross section including inverted triangular top and bottom sections secured to said rectangular cross section positioned below said second conveyor means for blending and holding mixed materials for loading and including door means in a bottom thereof, and including a plurality of vertically positioned cellular baffle members whereby said blending system minimizes time for blending and requires least energy for blending.

4,358,206
DRAFT TUBE APPARATUS

Marlin D. Schutte, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,243
Int. Cl.³ B01F 5/12
U.S. Cl. 366—262 7 Claims

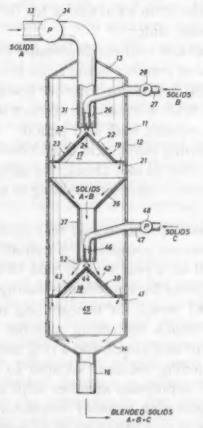


1. Draft Tube apparatus for use in a tank containing liquid to be mixed which comprises a draft tube disposed in said tank, an impeller in said draft tube for providing axial flow of said liquid therein, flow guide means disposed at the inlet region of said draft tube to change the direction of flow in said region from radially to axially directed flow of generally uniform velocity, said guide means comprising an annular open tubular member spaced from the walls of said tank having a first tubular section at one end thereof extending axially into said draft tube at said inlet, and a second section at the opposite end thereof being in its entirety spaced axially outward from the inlet end of said draft tube and extending outwardly from said draft tube inlet and radially away from said draft tube.

4,358,207
BLENDING SYSTEM FOR DRY SOLIDS

Clarence E. Roth, 1048 Agusta, Houston, Tex. 77057

Filed Oct. 6, 1980, Ser. No. 194,125
Int. Cl.³ B01F 15/00
U.S. Cl. 366—336 3 Claims



1. A blending system for dispersing continuously in a fixed proportion of a first solids flow into a second solids flow thereby forming a homogeneous solids flow comprising:

(a) an upright vessel at its low extremity having an outlet for the homogeneous solids flow;

(b) at least one blending stage disposed within said vessel above said outlet;

(c) at least one blending stage provided by an inverted Vee element with inclined side surfaces mounted centrally in said vessel and with its apex pointed upwardly, a first inlet for the first solids mounted in said vessel vertically above the apex of said element, a second inlet for the second solids mounted in said vessel with a discharge opening abut said first inlet and displaced laterally from the apex of said element;

(d) first means for supplying at a certain flow rate the first solids through said first inlet to flow about the apex of said element and downwardly along its side surfaces;

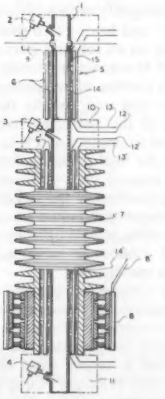
(e) second means for supplying at a certain flow rate the second solids through the second inlet to flow downwardly along the side surfaces of said element whereby the first solids are uniformly distributed into the second solids to produce a homogeneous solids flow through said outlet from said vessel; and,

(f) said vessel contains a second blending stage which includes a second inverted Vee element with inclined side surfaces and with its apex pointed upwardly, a third inlet mounted in said vessel vertically above the apex of said second element, a fourth inlet mounted in said vessel with a discharge opening about said third inlet and spaced laterally from the apex of said second element, third means for supplying at a certain flow rate solids through said third inlet to flow about the apex of said second element and downwardly on its side surfaces, and fourth means to supply at a cetain flow rate the homogeneous solids from the first blending stage as the solids flow through the fourth inlet to flow downwardly along the side surfaces of said second element, whereby there is a uniform distribution of the solids from said third inlet into the solids from the fourth inlet to produce a second homogeneous solids to flow through said outlet from said vessel.

4,358,208
APPARATUS FOR DETERMINING ENTHALPY OF A FLUID MEDIUM

Friedrich Bahner, Rotenburg, and Harry Pleva, Horb, both of Fed. Rep. of Germany, assignors to Babcock-BSH Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Dec. 27, 1979, Ser. No. 107,654
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856288
Int. Cl.³ G01K 17/16, 3/00
U.S. Cl. 374—41 9 Claims



1. An apparatus for determining quantities of enthalpy of a fluid medium, comprising tubular duct means through which the medium is passed; means for measuring mass flow of the passing medium; a system for altering thermal condition of the passing medium so as to cause the medium to release or absorb

heat; means for measuring inlet and outlet temperatures of the passing medium; heat flow measuring means installed between said duct means and said thermal condition altering system, said heat flow measuring means including two concentric electrically insulated wire coils of a material having temperature dependent resistance, said coils being disposed around said duct means in spaced and concentric relationship to each other, and further including a layer of a material of a moderate thermal conductivity and having a predetermined thickness, said layer being interposed between the two wire coils to form a thermal resistance, and said coils arranged at opposite sides of the thermal resistance to determine the heat flow as a function of temperature difference across said resistance; whereby the quantities of enthalpy are computed from a heat balance equation which is set up from the measured data of mass flow, heat flow and the inlet and outlet temperatures.

4,358,209

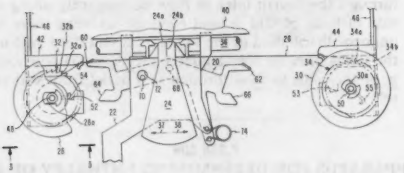
PRINT RIBBON DRIVING MECHANISM

James M. Rigotti, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 79,607, Sep. 27, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,782

Int. Cl.³ B41J *33/50, 33/514*

U.S. Cl. 400—219.2 **5 Claims**



1. Mechanism for driving a pair of spools having a print ribbon wound thereon and extending therebetween and including:

a pair of rotatably mounted, fixedly positioned spindles each adapted to carry a print ribbon spool,

a reciprocatively mounted support carrying a printhead which is movable between said spindles, toward one of said pair of spindles and away from the other of said spindles,

a switching bail swingably mounted on said reciprocatively mounted support and having two pawl portions on opposite ends formed as an integral part of said bail, one of which is adapted to contact and rotate one of said spindles during the final portion of reciprocative motion of said support toward said one spindle in the first principal swung position of the switching bail, and the other of which is adapted to contact and rotate the other of said spindles during the final portion of reciprocative motion of said support toward such other spindle in the second principal swung position of the switching bail,

a trigger lever swingably mounted on each of said spindles and adapted to swing into an operative position as the last convolution of ribbon is unwound from the spool mounted on this spindle, and

a pair of camming surfaces on opposite ends of said switching bail for engaing the associated one of said trigger levers in the said operative position as said support moves toward the spindle carrying said one trigger lever so that the switching bail is swung from one principal swung position to the other principal swung position to be effective to drivingly rotate said spindle carrying said one trigger lever on successive reciprocative movements of said support toward this spindle for thereby causing the spool on such spindle to wind the print ribbon thereon;

said switching bail in one principal swung position engaging one spindle with said pawl portion at one end of a reciprocative stroke and having the camming surface at the opposite end of the bail positioned to contact the trigger lever of the other spindle, when in said operative position, at the end of the opposite reciprocative stroke to pivot said switching bail to the other of said principal swung positions, whereby during a reversing action said pawl portions are disengaged from said spindles.

4,358,210

MECHANICAL PENCIL WITH CHUCK CLOSING BY NORMAL WRITING GRIP

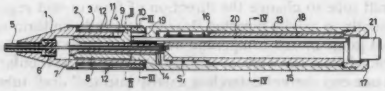
Yasuyuki Hashimoto, Nishinomiya, and Osamu Torii, Kyoto, both of Japan, assignors to Ancos Co., Ltd., Osaka, Japan

Filed Nov. 14, 1979, Ser. No. 94,263

Claims priority, application Japan, Nov. 20, 1978, 53-142267; Jul. 30, 1979, 54-104174

Int. Cl.³ B43K *21/22, 24/10*

U.S. Cl. 401—65 **1 Claim**



1. A mechanical pencil comprising:

a hollow pencil body including a front axial sleeve having a generally conically shaped portion and a rear axial sleeve having a generally cylindrical shape;

a chuck disposed within said pencil body and having a resiliency urging said chuck to open outwardly at a front end thereof, said chuck gripping a lead when tightened;

a slider including a lead holding member for lightly holding the lead, said slider being slidable at a tip of said front axial sleeve and said slider including a shouldered portion positioned within the front axial sleeve for limiting a range of movement of said slider;

a generally cylindrical resilient depression member, one end of said depression member being fixed to a portion of said pencil body, said depression member being positioned at a position of the body normally in contact with the writer's fingers during writing with said pencil;

means for transmitting movement due to deformation of said depression member to said chuck, the deformation of said depression member causing tightening of said chuck about said lead;

lead casing means disposed in said rear axial sleeve;

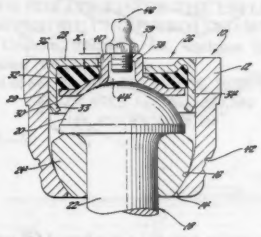
said lead casing means comprising a cylindrical lead casing rigidly coupled to a rear end of said chuck and further comprising a spring for rearwardly biasing said chuck and casing, and said means for transmitting movement comprising a first chuck tightening member surrounding at least a portion of said chuck and a ring member in contact with said tightening member secured to a rear free end portion of said depression member with a front end portion of said tightening member contacting a front outer slanted portion of said chuck so as to transmit movement of said depression member due to its deformation to said chuck whereby said chuck tightening member is advanced to positively grip the chuck; and

an additional lead feeding mechanism, said additional lead feeding mechanism comprising a pushbutton extending outwardly axially from a rear end of said rear axial sleeve for manual depression and a longitudinal rod in contact at one end thereof with the rear end of said chuck tightening member and at the other end thereof with said pushbutton.

4,358,211
PIVOT JOINT WITH VISUAL PRELOAD INDICATOR

Stanley R. Goodrich, Jr., Saginaw, and Jerry M. Roethlisberger, Bridgeport, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 179,094, Jul. 9, 1971, abandoned. This application Sep. 9, 1974, Ser. No. 504,021
Int. Cl.³ F16C 11/06
U.S. Cl. 403—27 2 Claims



1. A pivot joint comprising
a housing having an upper and a lower opening,
a lower bearing seat in said housing,
a stud unit having a head and a shank,
said head being disposed in said housing and bearing against said lower bearing seat in an engagement subject to wear in use,
said shank protruding through said lower opening,
a cover for said upper opening having a visually exposed aperture therethrough and an exterior, substantially planar surface contiguous with said visually exposed aperture,
means permanently securing said cover to said housing and fixing the position of said aperture and said exterior, substantially planar surface with respect to said housing throughout the life of the pivot joint,
an upper bearing seat in said housing disposed between said cover and said head and bearing against said head in an engagement subject to wear in use,
a protuberance telescopically disposed in said visually exposed aperture in juxtaposition thereto, and
spring means in said housing preloading said head into engagement with said seats and moving said protuberance downwardly in unison with the upper bearing seat as the head and bearing seats wear,
said protuberance having a grease fitting secured to an upper end thereof and a substantially flat upper surface extending laterally beyond the maximum circumferential boundary of said grease fitting, said substantially flat upper surface being initially spaced a preselected distance above said exterior substantially planar surface of said cover, which preselected distance is substantially equal to the distance that the substantially flat upper surface travels under bias of said spring means between a first position determined by an initial unused condition of said head and bearing seats and a second position determined by a worn condition of said head and bearing seats warranting replacement of the joint,
said substantially flat upper surface of the protuberance and said substantially planar surface of said cover being necessarily substantially coplanar when said worn condition occurs and simultaneously visually exposed to the exterior of said joint thereby giving a visual indication from outside the joint that replacement is warranted.

4,358,212
HIGH COMPRESSION THIMBLE

William E. Compton, 999 Beach Rd., Sanibel Island, Fla. 33957

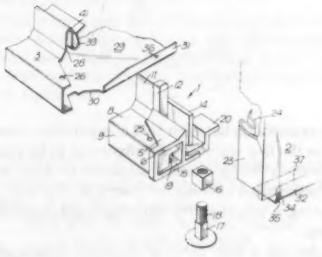
Filed Jun. 25, 1981, Ser. No. 277,094
Int. Cl.³ F16G 11/00
U.S. Cl. 403—210 5 Claims

1. A high compression thimble comprising a main generally horse shoe shaped frame including a semi-circular base portion and a pair of outwardly converging arm portions, a continuously outwardly opening groove defined about the outer periphery of said base arm portions, a one piece cylindrical ring having an outer diameter to snugly fit within the inside periphery of the base portion and having an internal annular aperture to receive therethrough a securing pin, and welding material securely welded between opposite sides of the outer circumference of the ring and the internal diameter of the semi-circular base portion on opposite sides thereof.

4,358,213
JOINING MEMBER AND/OR A JOINT

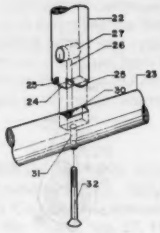
Harold R. Hawkins; Clive A. Gardner; Lindsey J. Roke; Richard J. Clark, and Warwick F. Rumble, all of Auckland, New Zealand, assignors to Fishel & Paykel Limited, Auckland, New Zealand

Filed Aug. 31, 1979, Ser. No. 71,496
Claims priority, application New Zealand, Sep. 7, 1978, 188367
Int. Cl.³ F16B 1/00, 9/00
U.S. Cl. 403—231 16 Claims



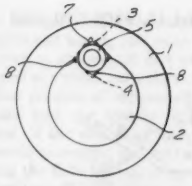
1. A joining member comprising a body, a flange on at least two exterior surfaces of said body having surfaces in parallel spaced relationship to said surfaces of said body forming a slot lying in planes substantially parallel to said surfaces of said body and an abutment extending from an outer surface of said body, said slot and said abutment being constructed and arranged to receive suitably shaped members so that said members are positioned so as to be closely adjacent one another over at least the parts thereof received by said slot and abutment.

4,358,214
RATTAN JOINT
John C. Shull, 4996th CA DET(RTU) APO, San Francisco, Calif. 96528
Filed Aug. 31, 1979, Ser. No. 71,787
Int. Cl.[3] B25G 3/00; F16B 7/08
U.S. Cl. 403—234 3 Claims



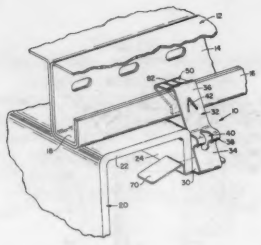
1. An improved rattan joint comprising a pair of identical rattan pole male members each including at least one rectangular tongue positioned substantially on a diameter of said end together with an opposed pair of partially pole - encompassing arcuate side lips, a rattan pole female member having oppositely disposed grooves axially positioned thereon and complemental with the respective tongues of said male members fitted therein to form a cross-joint; and means for fastening together said male members and said female member.

4,358,215
KEY CONNECTION
Evgeny I. Rivin, 17641 Wiltshire Blvd., Lathrup Village, Mich. 48076
Filed Oct. 20, 1980, Ser. No. 198,966
Int. Cl.[3] F16B 3/00
U.S. Cl. 403—357 9 Claims



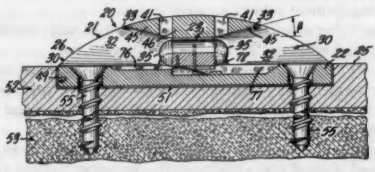
1. A key connection between two components, comprising:
keyslots in the first and second components to be connected, said keyslots being situated adjacent to each other to create a common opening for insertion of a key;
a key having a helical spring-like shape and inserted in said opening;
the key having a free external diameter before assembly larger than the diameter of the inscribed circle of said opening for key insertion, whereby the key must be twisted around its axis before insertion or for disassembly or for relative displacement of the connected components in order to reduce its external diameter to less than the diameter of the inscribed circle of said opening so as to establish a preload force on the keyslots;
the degree of preload force being established by utilizing parameters which include the free external diameter of the key, the number of coils, and the cross-sectional shape and diameter of the key stock.

4,358,216
RESILIENT RETAINING CLIP
George C. Pleickhardt, Des Plaines, and Philip R. Belisle, Frankfort, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Sep. 2, 1980, Ser. No. 182,888
Int. Cl.[3] F16B 2/24
U.S. Cl. 403—387 9 Claims



1. A one piece spring material clip adapted for use in retaining two flanged members in generally perpendicular juxtaposed relation including a body, angularly disposed spring means extending in a first direction away from said body along a first edge thereof and terminating in first means for grasping a flange of a first member, said angularly disposed spring means includes a generally elongated portion and resilient means maintaining said elongated portion in tension, second means for grasping a flange of the second member integral with and extending laterally from said body along a second edge thereof, said second means facing generally in opposition to said first means.

4,358,217
HIGHWAY TRAFFIC LANE AND ROAD EDGE REFLECTORS
Walter E. Stone, 450 E. 20th St., New York, N.Y. 10009
Continuation-in-part of Ser. No. 17,188, Mar. 5, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 133,108
Int. Cl.[3] E01F 9/06
U.S. Cl. 404—16 25 Claims



5. In a reflector of the kind to be placed between highway traffic lanes and at road edges and the like for traffic guidance by light reflected therefrom; the improvement comprising:
a housing rising gradually from a location about the perimeter of the housing where, in use, said housing intersects the road surface,
at least one reflective element recessed within the housing,
a light channel opening from the exterior of the housing to the reflective element,
the housing having a shoulder on each side of the channel,
a bridge spanning the channel; and
a base portion adapted for location below the surface of a road, said base portion having a recess therein, the reflective element including a mounting means extending below the reflective element into the recess, means located entirely below the road surface cooperating between the recess and the mounting means, for locking the reflective element and mounting means in place and the reflective

element having a height extending substantially the entire distance from the plane of the road surface to an undersurface of the bridge.

4,358,218

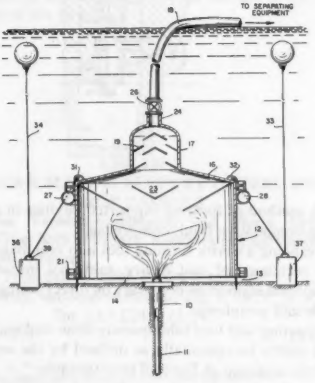
APPARATUS FOR CONFINING THE EFFLUENT OF AN OFFSHORE UNCONTROLLED WELL

William J. Graham, Metairie, La., assignor to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 104,327, Dec. 17, 1979. This application Jan. 15, 1982, Ser. No. 339,569

Int. Cl.³ E02B *15/04*

U.S. Cl. 405—60 **5 Claims**



1. Apparatus for confining an uncontrolled fluid stream which is issuing from an aperture or well in the floor of a body of water, said well being communicated with a reservoir of pressurized fluid within the substrate of said floor, which apparatus includes;

a plurality of anchors disposed at said ocean floor, being spaced outwardly from the head of said well and having cable guide means thereon,

a bell structure comprising an elongated side walled member having a lip at one end which defines a lower opening, a wall disposed at the bell other end forming a substantial closure across said other end, and

a buoyancy ring disposed circumferentially about said side walled member and adjacent to said wall at the bell other end,

a discharge port in said bell structure having means thereon for engaging an elongated conduit extending to the water's surface,

a plurality of elongated tensioning cables, each thereof having one end connected to said bell at said wall and at circumferentially spaced intervals, and said tensioning cables each being slidably received in a cable guide means at one of said anchors,

the cable remote end being engaged with take-up means at the water's surface which is operable to adjust the cable tension,

whereby positioning of said bell with respect to the well in said floor, can be adjusted to align the bell over the well, thereby to receive and direct the fluid stream issuing therefrom into said elongated conduit.

4,358,219

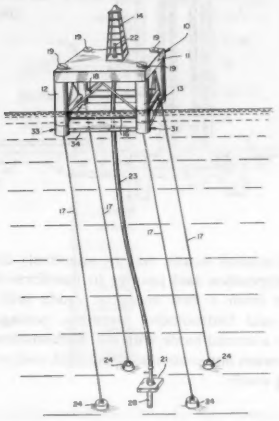
METHOD FOR CONFINING AN UNCONTROLLED FLOW OF HYDROCARBON LIQUIDS

Robert B. Burns, Huntington, N.Y., assignor to Texaco Development Corporation, White Plain, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,791

Int. Cl.³ F02B *15/04*

U.S. Cl. 405—60 **7 Claims**



1. Method for confining an uncontrolled outflowing stream of hydrocarbon fluids from a source thereof at the floor of a body of water, which method comprises the steps of;

positioning a floating vessel at the water's surface above said source of hydrocarbon fluids, said vessel comprising a hull, a plurality of controlled buoyant floats which depend downwardly from the hull to support the latter beyond the water's surface, and a controlled buoyancy raft releasably connected to the respective floats,

locating a plurality of anchor members at the ocean floor, being spaced about said hydrocarbon fluid source, each of said anchor members including a tension line which extends to the vessel and is adjustable to draw said vessel downward against the buoyant action of said buoyant floats whereby to substantially align the floating vessel above the hydrocarbon fluid source,

applying a tent element to said raft to define a fluid confining enclosure thereon,

and guidably lowering the raft along the respective anchor member tension lines, whereby said tent element will be disposed above said hydrocarbon fluid source in position to receive said uncontrolled outflowing stream of hydrocarbon fluids.

4,358,220

FUNCTIONALLY TRANSFORMABLE DAM

Francisco J. Gutierrez Atencio, Estafeta Fr. Garcia, 3105 Diamante Prov., Entre Rios, Argentina

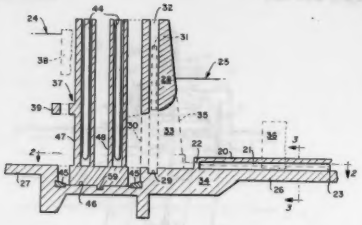
Filed Mar. 24, 1980, Ser. No. 133,441

Int. Cl.³ E02B *9/00, 9/08*

U.S. Cl. 405—75 **14 Claims**

1. A functionally transformable dam including, a main dam body having a fluid flow passage therethrough, conduit means adjacent said fluid flow passage, said conduit means having opposite open ends adapted to admit and discharge fluid therethrough respectively, first guide means fixedly disposed adjacent said passage downstream said main body, said conduit means joined to said guide means for rectilinear displacement therealong between a first position with a selected one of said open ends juxtaposed said passage to a second position with said conduit means removed from juxtaposed said passage, and

additional guide means fixedly disposed adjacent said passage upstream said main body, a hydromotive assembly joined to said additional guide means for rectilinear displacement therealong between a first position with said assembly juxtaposed said passage to a second position with said assembly removed from said passage whereby, said hydromotive assembly pas-



sage and conduit means, may be selectively displaced to and from juxtaposition said passage to transform the function of said dam from a first energetic mode with fluid passing through said hydromotive assembly, passage and conduit means, to a second mode with said hydromotive assembly and conduit means non-communicating with said passage to define a sluicing mode.

4,358,221

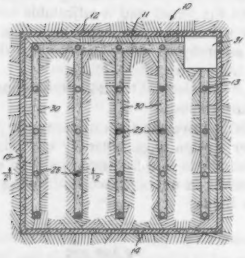
SYSTEM FOR POLLUTION CONTROL

Norman E. Wickberg, 27 Wardell Cir., Oceanport, N.J. 07757

Filed Jan. 19, 1981, Ser. No. 226,111

Int. Cl.³ C02F *11/12, 1/00*

U.S. Cl. 405—128 **2 Claims**



1. An improved dump site for chemical and toxic wastes formed in an area having a natural aquaclude substantially parallel to the existing grade thereof comprising: a vertical impacted concrete cutoff wall extending from said grade to said aquaclude to define a liquid impermiable enclosure, a plurality of vertical bores extending into the area enclosed by said wall and extending substantially between grade level and said aquaclude, a quantity of sand filling said bores and forming a liquid wick; a plurality of gravel filled windrows communicating with said wicks to form a drainage network, and a collection pit communicating with said drainage network; whereby upon the placing of waste slurries within said area, leachate will collect in said wicks to rise to said windrows and flow to said collection pit for removal.

4,358,222

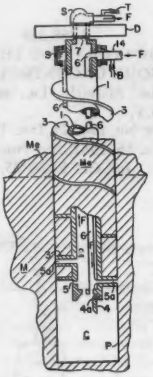
METHODS FOR FORMING SUPPORTED CAVITIES BY SURFACE COOLING

Richard E. Landau, Box 69, Malverne, N.Y. 11565

Continuation-in-part of Ser. No. 3,808, Jan. 16, 1979, abandoned, Ser. No. 750,254, Dec. 13, 1976, abandoned, and Ser. No. 616,617, Sep. 25, 1975, abandoned. This application Dec. 10, 1980, Ser. No. 215,145

Int. Cl.³ E02D *19/14*

U.S. Cl. 405—130 **15 Claims**



1. A method of forming supported cavities in material containing congelative fluid, comprising;

(a) advancing a cavity forming tool into said material to define the periphery of said cavity, said tool initially providing peripheral support as necessary by direct contact of said tool with said periphery,

(b) extracting said tool subsequently from said material to form said cavity incrementally as defined by the segment of periphery exposed as the tool is withdrawn,

(c) introducing coolant into said cavity increment requiring periphery support substantially simultaneously with cavity exposure in a manner to permit the coolant to coact with said periphery and provide intermediate support as needed, and

(d) maintaining the coolant within the defined cavity segment until the congelative fluid in the material at the cavity periphery is suitably congealed and the material strengthened thereby to render the periphery of said cavity at least temporarily self-supporting.

4,358,223

METHOD AND APPARATUS FOR CONSTRUCTING BURIED PIPELINE SYSTEMS

Hans O. Jahns; Christopher E. Heuer, and Hsiu-Hsyong Hsu, all of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Jul. 29, 1980, Ser. No. 173,301

Int. Cl.³ E02D *19/14*

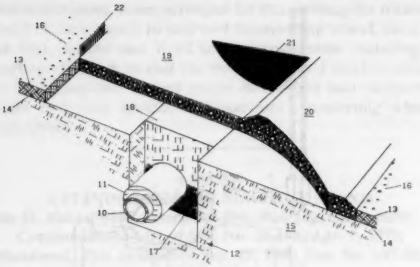
U.S. Cl. 405—157 **38 Claims**

1. A method for reducing frost heave in a buried pipeline system used for transporting product having a temperature less than 32° F. through frost-susceptible soil having a surface, an upper organic layer, and a lower mineral layer, said method comprising the following steps:

burying the pipeline substantially entirely in the lower mineral layer; and

covering the pipeline and the region surrounding it with a blanket of heat absorbent, mineral material placed on the

surface of the soil, said blanket of heat absorbent, mineral material extending on both sides of the pipeline for a distance



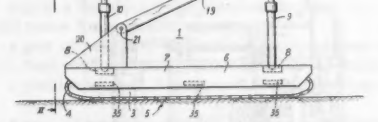
at least equal to the distance from the surface of the soil to the bottom of the pipeline.

4,358,224

CONTINUOUS SLIDING SUPPORT GANTRY FOR A LARGE PASSAGE

Guy Blanpain, Verneuil-en-Halatte, and Pierre Grandfils, Precy-sur-Oise, both of France, assignors to Charbonnages de France, Paris, France

Filed Jul. 7, 1980, Ser. No. 166,399
Claims priority, application France, Jul. 6, 1979, 79 17589
Int. Cl.³ E21D *15/34*
U.S. Cl. 405—298 **11 Claims**



1. A roof support in the form of a gantry for supporting a roof of a passage and advanceable along a floor of such passage, the support comprising:

(a) at least three parallel upper frames including two lateral frames and at least one intermediate frame, at least one of which frames comprises a straight beam;

(b) at least two lower frames each provided with an articulated track;

(c) jack means operable to clamp at least one of the upper frames against the roof of the passage;

(d) means for transmitting advancing forces of the support from the lower frames to the upper frames;

(e) at least two cross-members extending between the lateral frames and carrying the upper frames;

(f) guide means carried by the cross-members and supporting the at least one beam for slidable displacement thereof longitudinally of the support when said one beam is clamped to the roof between the rock and said guide means; and

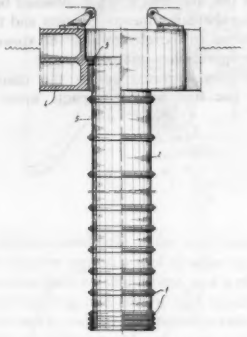
(g) means for sliding the at least one beam.

4,358,225

DEEP OCEAN CONDUIT

Barend J. G. van der Pot, Delft, and Wilfred Griekspoor, Wassenaar, both of Netherlands, assignors to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Continuation of Ser. No. 902,143, May 2, 1978, abandoned. This application Jul. 22, 1980, Ser. No. 171,073
Int. Cl.³ F02D *21/00*; E02B *9/00*
U.S. Cl. 405—303 **8 Claims**



1. In a deep ocean conduit operative for the transportation of sea water from a location at great depth towards a structure on the water surface, said conduit having its upper end anchored to said structure and its lower end free and unanchored to the sea bed in the operative position, the improvement comprising a tubular wall made from flexible material, and a plurality of heavy annular members spaced apart in planes perpendicular to the axis of the conduit with the flexible wall material connected to said annular members; said flexible tubular wall material, from annular member to annular member, being maintained in its tubular shape at the location of the annular members by its connection to said members and, inbetween the annular members, by the weight of said annular members, said conduit having a diameter of 20 meters or more and a length of more than 100 meters.

4,358,226

METHOD FOR CONVEYING ARTICLES BY AIR FLOW AND APPARATUS FOR WITHDRAWING CONVEYED ARTICLES

Seigo Nagata, Yaizu, and Iwao Saito, Shimizu, both of Japan, assignors to Daiwa Can Company, Ltd., Japan

Filed Feb. 28, 1980, Ser. No. 125,479
Int. Cl.³ B65G *51/02*
U.S. Cl. 406—82 **6 Claims**

1. Apparatus for conveying articles between first and second locations, said apparatus comprising

an elongated conduit extending between said two locations and having an inlet thereto at said first location and outlet therefrom at said second location,

means for positioning a vertically superposed stack of articles at said first location,

first air flow supply means for introducing an air flow into the inlet of said conduit, said positioning means being disposed relative to said conduit such that the lowermost article in the stack is aligned with said inlet, said introduced air being operable to draw said lowermost article into said conduit and transport it therein toward said conduit outlet,

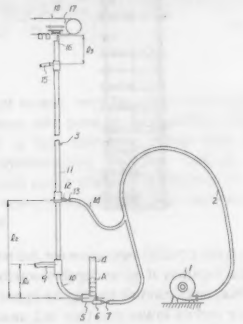
means for exhausting air flow from said conduit at a third location downstream of said inlet whereby back pressure within said conduit upstream of said third location and existing by presence of said article in said conduit is released with continuing introduction of air flow into said inlet being

operable to draw the next stack article which is aligned with said inlet into said conduit,

second air flow supply means for introducing a second air flow into said conduit at a fourth location downstream of said third location to therewith further transport the first article toward said conduit outlet,

second air flow exhausting means in said conduit at a fifth location downstream of said fourth location for exhausting air flow from said conduit whereby the air flow transport force acting on the first article when situated between the second air flow exhausting means location and the conduit outlet is diminished to thereby reduce the speed at which said first article approaches said outlet, and

flexible impact means disposed across the conduit outlet against which the first article impacts upon discharge



thereof from said conduit, said flexible impact means embodying article attraction means operable to attract an article discharging from said conduit towards said impact means, said conduit being disposed in a generally vertically directed orientation with the inlet thereto at the lower end and the outlet therefrom at the upper end, said apparatus further comprising a transport unit located at the upper end of said conduit and including a transport belt traversing a generally horizontal travel course passing closely adjacent the conduit outlet and intervening said outlet and said flexible impact means, said transport belt having article holding means thereon for retentively holding thereagainst an article discharging from said conduit whereby advance of the belt away from said outlet transports held articles to a further location.

4,358,227

DEVICE FOR PREPARING AND INJECTING SEALING CHARGES OF CEMENT

George Cagnioncle, Lyons, France, assignor to Société Chimique des Charbonnages SA, Paris La Défense, France

Filed Jun. 2, 1980, Ser. No. 155,236

Claims priority, application France, Jun. 1, 1979, 79 14082

Int. Cl.³ B05B *7/06*

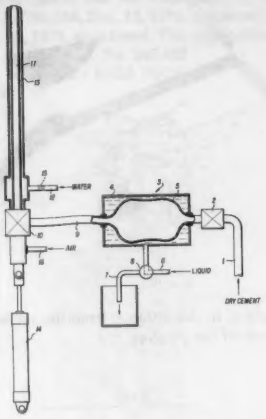
U.S. Cl. 406—96 **8 Claims**

8. A method of preparing and injecting sealing charges directly into a borehole for sealing bolts emplaced therein, comprising:

flowing dry powdered cement under compressed air pressure into a flexible pouch to fill said pouch to a predetermined dose amount and thereby causing said pouch to expand;

subsequently flowing a fluid against the outer wall of said flexible pouch to exert a pressure thereon and thereby cause the dry powdered cement to flow therefrom into a double wall nozzle to be injected through an inner one of two concentric tubes of said nozzle; and

injecting water, simultaneously to said flowing of said fluid, into the outer one of the two concentric tubes of the double wall nozzle whereby the water and cement are independently and simultaneously injected from said noz-



zle and into said borehole from said double wall nozzle and thereby mix in said borehole upon leaving the nozzle.

4,358,228

MACHINE TOOL

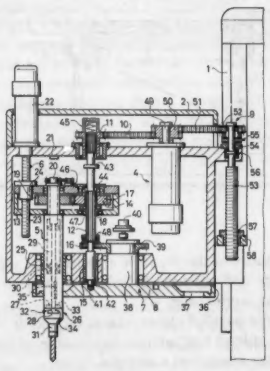
Gerhard Stark, Beethoverstr. 21, 7312 Notzingen, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,592

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936785

Int. Cl.³ B23B *39/20;* **B23G** *1/20*

U.S. Cl. 408—35 **22 Claims**



1. A machine tool, comprising a table; a standard; a head part; a main spindle mounted in said head part and having an axis; an electric motor in said head part for driving said main spindle in rotation; a tool changing device mounted in said head part for holding a tool holder carrying a tool, said tool holder being coupled to said main spindle; means for displacing said head part on said standard relative to said table, said displacing means including a rotary element rotated by said electric motor and adapted to displace said head part relative to said table; and a plurality of transmitting means for transmitting the rotation of said electric motor, said tool changing device including a rotary tool transporting wheel having at least one hole through which said tool holder extends to its working position, said plurality of transmitting means includ-

ing first transmitting means arranged for transmitting the rotation of said electric motor to said rotary element so as to rotate the latter, a second transmitting means arranged for transmitting the rotation of said electric motor to said main spindle, and third transmitting means arranged for transmitting the rotation of said electric motor to said tool transporting wheel, each of said first, second and third transmitting means including a coupling arranged so that the rotation of said electric motor can be transmitted to said rotary element of said displacing means, said main spindle, and said tool transporting wheel, respectively.

4,358,229

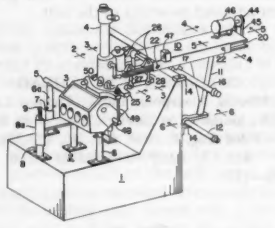
CYLINDER BORING MACHINE STAND

Dale H. Rukes, 4450 Caterpillar Rd., Redding, Calif. 96001

Continuation-in-part of Ser. No. 26,198, Apr. 2, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,362

Int. Cl.³ B23B *41/12*

U.S. Cl. 408—88 **12 Claims**



1. An apparatus for the boring of engine cylinders comprising:

a base member of generally right angle configuration having a vertical back section, a horizontal base plate forming parts of said right angular base member, and having two oppositely spaced vertical sides joining said base plate and said back section;

means for supporting an engine block upon said base plate;

said engine block having a series of cylindrical bearing housings in a line along a horizontal center line;

said means for support comprising,

a pair of vertically adjustable support columns on said base plate engaging opposite ends of said block;

a positioning shaft through said bearing housings of said block;

a pair of vertically adjustable support columns supporting opposite ends of said shaft on said base plate;

means for fastening said engine block to said base plate;

a movable elongated positioning carriage device positioned upon the top of said vertical back section of said base member;

said carriage device including means for permitting movement in a longitudinal direction and means for permitting movement in a transverse direction with respect to said base member and said engine block;

a mounting plate having positioned upon its upper surface a cylinder boring machine;

said mounting plate being suspended from said positioning carriage device by four parallel arms;

said arms being supported from said carriage by pivots positioned at the upper end of each arm and mounted on said carriage;

spherical bearings positioned on the lower end of each arm;

said bearings engaging said mounting plate on opposite edges thereof;

means for fastening said mounting plate to said engine block;

means for imparting an oscillating motion to said arms.

4,358,230

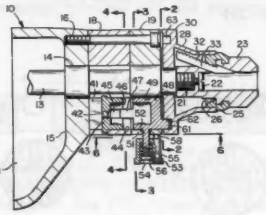
CHUCK OPERATING DEVICE FOR HAND DRILL

Robert W. Roblin, 52 Skycrest Dr., Rochester, N.Y. 14616

Filed Apr. 4, 1980, Ser. No. 137,531

Int. Cl.³ B23B *31/06*

U.S. Cl. 408—124 **13 Claims**



1. In an electric hand drill of the type having in its housing a reversible electric motor, a tool spindle rotatable selectively in opposite directions by said motor, and a plurality of chucking jaws surrounding one end of said spindle selectively for rotation therewith, and for movement relative to said spindle for releasably securing a tool bit in a bore in said one end of the spindle, a device for selectively connecting said jaws to said motor for movement thereby between bit-locking and bit-releasing positions, respectively, comprising

a chuck actuator member rotatably mounted on said spindle and drivingly connected to said jaws normally to rotate with said jaws and said spindle relative to said housing, and

manually operable control means on said housing for selectively securing said actuator member against rotation with said spindle, whereby rotation of said spindle relative to said actuator member causes said jaws to be moved to bit-locking positions, when said spindle is rotated in one direction, and to bit-releasing positions, when said spindle is rotated in the opposite direction,

said control means being operative to effect a static loading of said jaws by said spindle when the spindle is rotated by said motor in said one direction, and to effect a dynamic loading of said jaws by said spindle, when the latter is rotated by said motor in said opposite direction.

11. A hand drill comprising

a housing containing a rotatable tool spindle, a reversible electric motor for driving the spindle, and a movable chucking mechanism on said spindle operable releasably to lock a tool bit in the spindle,

coupling means for releasably connecting said chucking mechanism to said housing, including a control member movable selectively to first and second positions, respectively, to effect movement of said mechanism toward a bit locking position, when said motor drives said spindle in one direction, and toward a bit releasing position, when said motor drives said spindle in the opposite direction,

means connected to said control member for operation thereby and operative automatically to cause said motor, when energized, to rotate said spindle in said one direction, when said control member is in said first position, and to rotate said spindle in said opposite direction, when said control member is in said second position,

a handle on said control member for manipulating said member manually between said first and second positions, and

safety means interposed between said handle and said control member and operative to resist movement of said member to either of its first and second positions thereby to prevent accidental connection of said motor to said chucking mechanism during normal use of the drill.

4,358,231
DEVICE FOR INTERNALLY DEBURRING TUBES

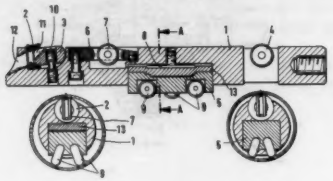
Friedrich Meier, Remscheid, Fed. Rep. of Germany, assignor to Röchling-Burbach Weiterverarbeitung GmbH, Völklingen-Saar, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,191

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1979, 2940874

Int. Cl.³ B23D *1/08*

U.S. Cl. 409—299 **6 Claims**



1. Device for internally deburring tubes or shaped tubular sections which are welded along longitudinal seams, comprising a support body having a first end and a second end spaced apart in the cutting direction, said support body having a first surface arranged to face the longitudinal seam and an oppositely facing second surface with said first and second surfaces extending in the direction between said first and second ends, a cutting ring mounted in said support body and projecting outwardly from said first surface, a first guide roller mounted in said support body and located adjacent said cutting ring, said first roller projecting outwardly from said first surface, a second guide roller mounted in said support body and spaced from said first guide roller in the direction between said first and second ends and being more remote from said cutting ring, said second guide roller extending outwardly from said first surface, said first and second rollers being aligned in the first end-second end direction, a one-piece guide element resiliently mounted in said support body, and three third guide rollers mounted in said guide element and projecting outwardly from said second surface, with said third guide rollers being spaced apart in a triangular arrangement in a plane extending through the axes of said third guide rollers.

4,358,232
VEHICLE LOAD RETAINING APPARATUS

Seborn E. Griffith, 11221 Pipeline, Pomona, Calif. 91766

Filed Mar. 10, 1980, Ser. No. 129,094

Int. Cl.³ B65D *63/00;* **B61D** *45/00*

U.S. Cl. 410—100 **7 Claims**

1. Apparatus for retaining a load on a vehicle bed comprising:

a belt;

a connector at a first end of the belt for attaching said end to a first side of the vehicle;

said belt being adapted to extend upwardly from said first side of the vehicle and over the load to a location near a second side of the vehicle;

a chain;

a hook carred by the chain at a first end thereof for attaching it to said second side of the vehicle;

a buckle assembly attached to the second end of said chain connectable to the second end of said belt and constructed to enable adjustment of said second end of the belt relative to the buckle to conform the overall combined length of the belt and chain together essentially to the size of the load; and

a load binder adapted to be connected to the chain and including an actuating arm acting by swinging movement from a first position to a second position to take up slack in the chain in a manner tightening the belt on the load;

said buckle assembly including a rigid plate connected to said second end of the chain and containing an elongated generally rectangular opening through which said second end of the belt extends first in one direction and then back in the opposite direction to form a loop at one side of said plate, and an elongated pin formed separately from and movable relative to said plate and adapted to extend through said loop of the belt at said side of the plate and of a length greater than the length of said opening to bridge entirely across the length of the opening so that opposite ends of the pin engage said plate beyond both of two opposite ends of said elongated opening in a relation preventing the pin from moving through the opening and thereby binding the belt loop and retaining the belt against longitudinal movement relative to said plate in any of different adjusted positions of the belt.

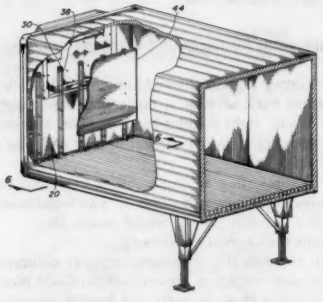
4,358,233
COLLAPSIBLE BULKHEAD

Richard D. Morris, Liverpool, and L. Thomas Lane, Manlius, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 1, 1980, Ser. No. 174,336

Int. Cl.³ B60P *7/14;* **B61D** *45/00*

U.S. Cl. 410—127 **5 Claims**



1. A collapsible bulkhead adapted for mounting on the front interior wall of a refrigerated truck or trailer comprising:

(a) an attaching base having a backside adapted to be affixed to said trailer interior wall for structural support;

(b) a plurality of toggle arms having the first end rotatably mounted, with fastening means, to said attaching base and pivotally nested therein;

(c) an extending support member of a size to be contained within said attaching base having fastening means to pivotally engage a second end of said toggle arm for radially extending or retracting from said trailer wall in parallelogram fashion reducing or increasing the overall width of the bulkhead;

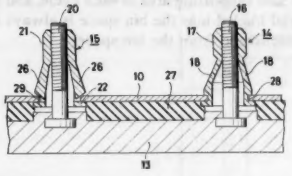
(d) means to retain said extending support members when pivotally nested into said attaching bases providing retention of the bulkhead in a collapsed condition; and

(e) said toggle arm comprising a converging channel shaped member having outboard extended legs, having portions defining a hole, nesting and attaching inside of said base on one end and on the other end juxtapositioned on the outside of said support member with the web contiguously engaging the support member limiting the perpendicular rotation.

4,358,234
PART FIXING SYSTEM

Tetuo Takegawa, Yokosuka; Yoichi Kikuchi, Yokohama, and Akira Mizusawa, Fujisawa, all of Japan, assignors to Nissan Motor Co., Ltd. and Nifco Inc., both of Yokohama, Japan

Filed Aug. 28, 1980, Ser. No. 182,005
Claims priority, application Japan, Aug. 29, 1979, 54-119700[U]
Int. Cl.³ F16B *13/08*
U.S. Cl. 411—57 2 Claims

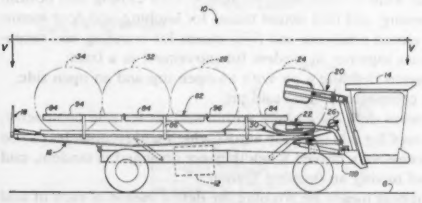


1. A part fixing system for fastening a part to an object, which part fixing system accomplishes the union between the part and the object by combined use of a plurality of bolts fixed on said part, comprising in combination with an object a plurality of retaining clips for absorbing positional deviation between the part and the object and at least one retaining clip for determining the position of the part, said plurality of retaining clips for absorbing positional deviation each comprising a nut adapted to be screw-fastened to the bolt and a plurality of deformable engaging pieces extended divergingly from the nut and provided at the leading ends thereof with grooves in resilient engagement with a fixing hole in the object, and said retaining clip for determining the position of the part comprising a nut adapted to be screw-fastened to the bolt, a cylinder joined to the nut, possessed of angular holes in the outer wall thereof and fitting intimately into a standard fixing hole in said object, and engaging claws extending from the nut sides of the angular holes of the cylinder within the angular holes and having the leading ends thereof in resilient engagement with the inner edge of the standard hole.

4,358,235
ADJUSTABLE CROSS CONVEYOR FOR BALE HANDLING APPARATUS

L. Dennis Butler, Kingsburg, and Leonid Mankin, Selma, both of Calif., assignors to Sperry Corporation, New Holland, Pa.

Filed Sep. 15, 1980, Ser. No. 187,012
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.5 4 Claims



4. A cross-conveying apparatus comprising:

means for cross-conveying various size bales from a varying first position to a substantially consistent second position, said means including a linkage having first and second members pivotally connected to and supported by a frame, said first and second members being pivotally interconnected by a third member having a length less than the length of said first and second members, said means further including a cross-conveyor arm connected to the linkage by an adjustment plate fixedly connected to said third member, said plate having a plurality of adjustment positioners along an arc on said plate;

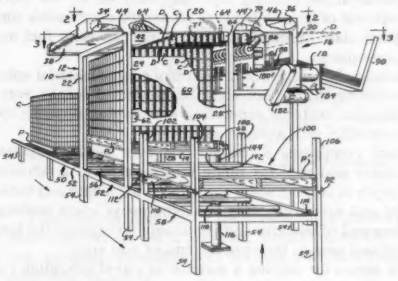
a hydraulic cylinder having an end pivotally connected to said frame; and

a piston extendable from and retractable into said cylinder said piston having an end pivotally connected to said plate, said arc defined by said piston end in response to said piston being retracted into and pivoting with said cylinder.

4,358,236
DE-PALLETIZING/PALLETIZING APPARATUS FOR CANS AND CAN-TYPE CONTAINERIZATIONS

Robert G. Dudley, P.O. Box 1731, Monterey, Calif. 92940

Filed Sep. 17, 1979, Ser. No. 76,171
Int. Cl.³ B65G *59/04*
U.S. Cl. 414—96 13 Claims



1. In apparatus used for unloading cans from pallets on which they are vertically stacked which apparatus embodies

a first station containing an elevatable lift onto which pallets stacked with cans are loaded,

a second station located to one side of said first station containing a discharge conveyor,

a continuously-moving belt which courses the upper reaches of the first and second stations, and

means disposed immediately above the course of said belt which attracts the cans to the underside of the belt when the pallet is elevated by the lift to locate the cans within the influence of said can attracting means whereby the cans are separated from the pallet and move with the belt out of the first station into the upper reaches of the second station for release to the discharge conveyor,

the improvement wherein

said can attracting means is so positioned that its influence on the cans terminates within the discharge station so as to release the cans to the discharge conveyor therebelow,

said discharge station including magnetic pulley means which continuously rotates on an axis extending transversely of the carrier belt movement and positioned beneath the carrier belt and said termination of the can attracting means such that the bottom end of the cans come under the influence of said rotating magnetic pulley means as their top ends are released from the carrier belt,

said magnetic pulley means tilting the thus-influenced cans out of their initial vertical disposition as they are released from the carrier belt and temper the free fall of the cans onto the discharge conveyor, and

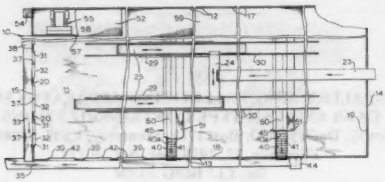
associated guide means which direct the released cans onto the discharge conveyor therebelow as the cans are tilted by the magnetic pulley means out of their initial vertical disposition.

4,358,237

RECOVERED SOLID WASTE STORAGE BUILDING AND METHOD

Harold B. Mackenzie, Wheaton, Ill., and Ingvar G. Anderson, Houston, Tex., assignors to New Life Foundation, Wheaton, Ill.

Filed Jun. 30, 1980, Ser. No. 164,295
Int. Cl.[3] B65G *65/32, 65/42*
U.S. Cl. 414—300 **26 Claims**



1. An at least semi-automated solid discrete material storage and retrieval bin building especially adapted for the storage and retrieval of large volumes of recovered combustible shredded particulate fibrous flocculant municipal waste fuel material, comprising:

a housing having a roof at the top of a large material volume capacity storage bin space of substantial height over an elongate material supporting area having opposite elongate sides and opposite ends;

means comprising a loading conveyor system adjacently under said roof for filling said material to a substantial depth in said bin space throughout the length and breadth of said supporting area in a progressive cycle starting at one end of said area and continuing throughout the length of said area to the opposite end of said area;

first means for starting a material retrieval unloading cycle by discharging a full depth increment of the material from said supporting area along said one end of said area;

means for receiving and handling the material discharged along said one end of said supporting area;

second means for continuing the retrieval discharge of material from said supporting area in sequence after said first means and adapted for discharging full depth increments of the material from said supporting area progressively at a plurality of places along one side of said area starting adjacent to said one end and advancing place-by-succeeding-place to said opposite end;

and means for receiving and handling the material discharged at said places along said one side;

said first and second means functioning in a progressive material unloading discharge cycle which trails and follows the loading cycle of said loading conveyor system throughout the length of said storage area, so that there is assurance that the full depth of material loaded into the bin space by said loading conveyor system will be retrieved and discharged from the bin space in a first in, first out sequence through the length and breadth of said supporting area in each material retrieval and discharge cycle.

26. A method of storing and supplying solid discrete recovered combustible shredded particulate fibrous flocculant municipal waste fuel material, comprising:

storing a large volume of such fuel in, and retrieving and discharging such fuel from, a large elongate material supporting area having opposite long sides and opposite ends and enclosed by a housing having upstanding walls rising to a substantial height along said sides and ends of the supporting area and bounded by said area, walls and roof;

said storing comprising operating a loading conveyor system adjacently under said roof at the top of said space and loading said fuel material into said space to a substantial depth onto said area in a cycle starting at one end of said space and continuing to the opposite end of said space;

and operating unloading means within said housing and thereby progressively retrieving and discharging and clearing out the material from said space by progressive full depth increments starting at said one end of said space and working successively to said other end of said space in a cycle which trails and follows said loading cycle;

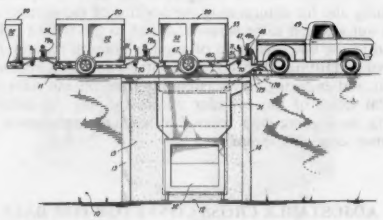
so that in cyclical sequence there is a substantially complete progressive clearing out and replacement of the full depth of material from said bin space throughout the length and breadth of said supporting area in each cycle, and thus the first material loaded into the bin space is always the first material discharged from the bin space.

4,358,238

COLLECTION, STORAGE AND DISPOSAL SYSTEM FOR REFUSE, TRASH OR ANY OTHER APPLICABLE MATERIALS

Lewis C. Ely, Atlanta, Ga., assignor to Ron Freeman, Atlanta, Ga., a part interest

Filed Jun. 7, 1979, Ser. No. 46,304
Int. Cl.[3] B66F *3/00;* B60F *1/56*
U.S. Cl. 414—387 **17 Claims**



1. A garbage disposal system comprising:

(a) a plurality of garbage receptacles each including (i) a body having side walls with a top opening through which the receptacle is filled and a bottom opening through which the contents are released, (ii) wheel means for each of said receptacles; (iii) opposed door means hingedly secured to said side walls on said body for temporarily closing said bottom opening; and (iiii) detent means for latching said door means in closed positions; and (iiiii) means for coupling said receptacles together in tendem for movement as a train;

(b) means defining a pit with an open top and an open side;

(c) a compactor within said pit;

(d) means defining a chute within said pit for said compactor;

(e) a roof for said open top across which said receptacles can be successively moved when they are arranged in tandem, said roof having an opening therein;

(f) tripping means for tripping the detent means of each of said receptacles as each receptacle is positioned over the opening of said top for permitting said door means of such receptacle to open for releasing the contents of said receptacle into said chute and then into said compactor;

(g) container means removably positioned adjacent to the discharge opening of said compactor for receiving the contents of said compactor therethrough;

(h) means for actuating said compactor to urge such contents into said container and for compacting such contents; and

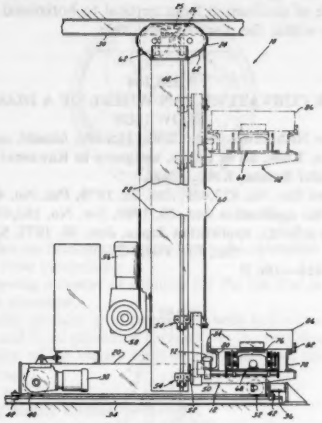
(i) means for closing said opening when said pit is not in use.

4,358,239

WAREHOUSE CRANE INCLUDING INCLINABLE TOTE PAN PULLER

Max J. Dechantsreiter, Milwaukee, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Sep. 26, 1980, Ser. No. 191,142
Int. Cl.³ B61B 10/02
U.S. Cl. 414—661 7 Claims



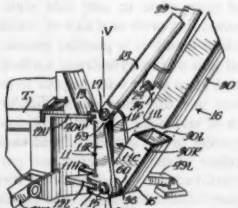
1. In the warehouse crane having an elevationally positionable carriage for alignment with individual storage areas, a shuttle guideably mounted on said carriage for limited transverse movement, a pair of reversibly driven endless chain mechanisms mounted one above the other on said shuttle and a tote pan puller connected to each of said endless chain mechanisms and arranged for bodily travel therewith in a generally horizontal and flat orbital path including travel at opposite ends of said path, said puller being disposed in a generally vertical direction and having an upper free end, the arrangement of said endless chain mechanisms being such that as said puller approaches the ends of said orbital path, it moves from a vertical position to a transversely outwardly inclined position whereby its free end can engage a tote pan handle as said puller moves in its inclined position and in an upward direction.

4,358,240

ASYMMETRIC BACKHOE

John F. Shumaker, Mt. Pleasant, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 19, 1980, Ser. No. 218,455
Int. Cl.³ E02F 3/38
U.S. Cl. 414—694 10 Claims



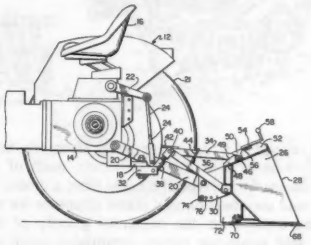
1. In a backhoe arrangement, comprising: a swing tower having a forward wall defining lower rearward extremities mounting a boom pivot shaft, and an upper rearward extremity mounting a boom actuator pivot shaft; a boom having its lower end pivotally mounted on said boom pivot shaft asymmetrically relative to said lower rearward extremities and free to swing forwardly and rearwardly of its true vertical position; a dipperstick carried at the upper end of said boom; and one boom hydraulic actuator means, pivotally mounted at one of its ends on said boom actuator pivot shaft to flank said boom and pivotally connected at its other end to said boom, for pivotally rotating said boom through a vertical plane, whereby the free end of said dipperstick is minimally obscured by said boom.

4,358,241

BUCKET ASSEMBLY FOR TRACTORS

Carl M. Anderson, Claremore, Okla., assignor to Hesston Corporation, Hesston, Kans.

Filed Aug. 4, 1980, Ser. No. 175,340
Int. Cl.³ E02F 5/00
U.S. Cl. 414—703 14 Claims



1. In combination with a tractor having a chassis provided with a power lift and a drawbar, an attachment for transporting, scraping, spreading and leveling bulk materials, said attachment including:

a bucket provided with a bowl having a materials inlet mouth;

pivot means tiltably mounting the bucket on said lift,

said bucket being normally disposed when in a lowered condition for receiving materials scooped thereby into its bowl through said mouth;

linkage pivotally interconnecting the bucket and said drawbar for tilting the bucket upwardly to a materials retentive position in response to raising of the bucket by said lift; and

a manually manipulable linkage disconnect assembly for releasing the bucket for automatic downward tilting thereof to a position dumping the materials from said bowl;

said linkage including upper and lower link means pivotally connected to the bucket, and a control link pivotally connected to the drawbar and to said upper and lower link means.

4,358,242

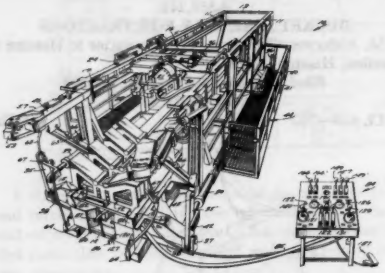
CORE EXTRACTION AND INSERTION APPARATUS

John B. C. Davies, Lanarkshire, Scotland, assignor to Industrial and Overseas Securities Limited, Lanarkshire, Scotland

Filed Dec. 11, 1979, Ser. No. 102,983
Int. Cl.³ B66F 11/00
U.S. Cl. 414—746 25 Claims

1. Apparatus for linearly moving a massive core into and out of a shell, comprising: an elongated frame structure including a pair of parallel spaced beams; means for connecting and locking said elongated frame structure to the shell; a moveable carriage operatively mounted for movement with respect to said spaced beams toward and away from the shell, said carriage having means for interconnection to the core; means operatively associated with said carriage for exerting a force

on said carriage for moving said carriage toward and away from the shell; and thrust surfaces associated with said frame structure for cooperating with said force exerting means for effecting movement of said carriage with respect to said beams; means for receipt of a structure for supporting the apparatus on a crane hook; balance control means operatively mounted on said frame structure for adjusting the position of said crane supporting structure to take into account changes in the location of the center of gravity of the apparatus-core combination during removal or insertion of the core from or into the shell, and during supporting of the core removed from the shell, said balance control means comprising: four arms, comprising said



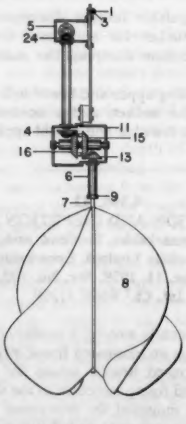
means for receipt of a crane supporting structure, mounted on spaced portions of said frame structure, each of said arms including means for receipt of a cable from a crane; means for mounting said members on said frame structure for movement toward and away from the center of gravity of said frame structure, said mounting means comprising pivot means for mounting each of said arms at one end thereof on the corners of said frame structure for pivotal movement about an axis perpendicular to the direction of elongation of said frame structure; and power means for effecting movement of said members toward and away from the center of gravity of said frame structure.

4,358,243

MULTIPLE ROTARY WIND POWER SYSTEMS

Oran M. Heath, 5603 Ravella Dr., Farmington, N. Mex. 87401

Filed Apr. 30, 1980, Ser. No. 145,458
Int. Cl.³ F03D *1/02, 11/02*
U.S. Cl. 416—11 **3 Claims**



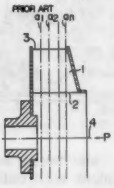
1. A wind-powered energy converter system comprising a cable stretched horizontally between external supports, multiple like rigid frames attached at intervals to said cable and pendent therefrom, said frames being fitted with torque power transmission means together with holding means for holding an appended external rotary wind driven impeller, wherein one said impeller is held in suspension beneath each said frame by having the upper extremity of a support member of said impeller securely held in rotatable contact with said torque power transmission means, and wherein said holding means permits said support member of said impeller to be deployed at any angle of declination from vertical to horizontal in either direction within the plane of said cable.

4,358,244

SINGLE CURVATURE FAN WHEEL OF A DIAGONAL FLOW FAN

Yoshiyasu Nishikawa, Ono; Chosei Harada, Akashi, and Masao Nakano, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Division of Ser. No. 872,459, Jan. 25, 1978, Pat. No. 4,227,868. This application Jun. 20, 1980, Ser. No. 161,400
Claims priority, application Japan, Jan. 28, 1977, 52-8947
Int. Cl.³ F04D *29/30*
U.S. Cl. 416—186 R **2 Claims**



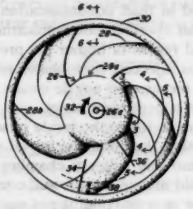
1. A fan wheel of a diagonal-flow fan for propelling a flow of a gas, said fan wheel comprising a rotational shaft, a frusto-conical main plate coaxially fixed to the shaft, a frusto-conical side plate spaced apart from the main plate and forming therebetween a diagonal flow path for the gas, and a plurality of fan blades each fixed at respective opposite side edges to the inner surfaces of the main and side plates and having an inner entrance part and an outer exit part, said entrance and exit parts extending transversely with respect to said diagonal flow path, said blades being secured between said frusto-conical main and side plates, said frusto-conical side plate being coaxially fixed with respect to the axis of rotation of the shaft, the cone angle of the main plate being greater than the cone angle of the side plate, each of said fan blades being in the form of a curved plate of a surface shape conforming to a portion of a cylindrical surface with a longitudinal axis, said portion being formed of elements constituted by mutual intersection lines between said cylindrical surface and successive coaxial conical surfaces varying between said conical surfaces of said main and side plates corresponding to ideal stream surfaces, respectively, said coaxial conical surfaces progressively diminishing in cone angle from said main plate to said side plate and having a common axis coinciding with said axis of rotation of the shaft and lying in a plane which is in parallel spaced relationship to said longitudinal axis of the cylindrical surface, said common axis being inclined at an angle with respect to said longitudinal axis when viewed in a direction perpendicular to said plane; and further each of said blades has an additional surface shape on a surface opposite to the surface of said surface shape, and an entrance surface shape at its entrance part, said further surface shape conforming to a portion of a further imaginary cylindrical surface which intersects said coaxial conical surfaces in the same manner as the first mentioned cylindrical surface to form mutual intersection lines, said entrance surface shape conforming to a portion of a still further imaginary cylindrical surface of relatively small diameter which intersects said coaxial conical surfaces to form mutual intersection lines.

4,358,245

LOW NOISE FAN

Leslie M. Gray, Belmont, Mass., assignor to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed Sep. 18, 1980, Ser. No. 188,317
Int. Cl.³ F28F *13/06*
U.S. Cl. 416—189 **20 Claims**



1. A fan particularly suited to low noise operation in a turbulent air flow comprising

a hub having a center of rotation for the fan that is aligned in a first direction,

a generally circular band concentric with and surrounding the hub, said band extending generally in the first direction, and

a plurality of fan blades each secured between said hub and said band,

each of said blades:

(i) being highly forwardly skewed;

(ii) having an increasing blade angle as a function of blade radius over at least the portion of said blade adjacent said band; and

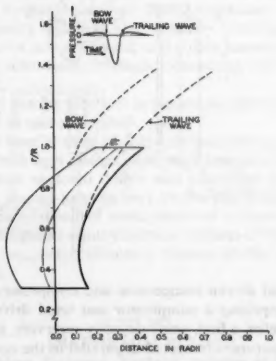
(iii) being secured to said band continuously along its width.

4,358,246

NOISE REDUCTION MEANS FOR PROP-FAN AND THE CONSTRUCTION THEREOF

Donald B. Hanson, Broad Brook, and Frederick B. Metzger, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 58,046, Jul. 16, 1979. This application Oct. 13, 1981, Ser. No. 232,599
Int. Cl.³ B64C *11/18*
U.S. Cl. 416—223 R **1 Claim**



1. The method of designing the planform of a prop-fan blade whose airfoil section operates at or above a critical Mach No. for reducing its noise level comprising the steps of

calculating the planform to obtain the sweep distribution of the blade for obtaining performance and noise level design objectives,

calculating the Mach surfaces of the leading and trailing edges of the blade in accordance with linearized or non-linearized aeroacoustical theory,

sweeping the tip to an intermediate radial blade station so that the blade sweep distribution is such that the leading and trailing edges fall behind the desired leading and trailing Mach surfaces respectively,

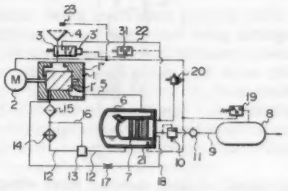
repeating the step of calculating the Mach surfaces to ascertain whether or not the leading and trailing edges actually fall behind its leading and trailing Mach surface, and repeating the last two mentioned steps until such time as the leading edge falls behind the leading Mach surface and the trailing edge falls behind the trailing Mach surface.

4,358,247

OIL COOLED COMPRESSOR

Toshitsugu Suzuki, Tokyo, and Masayuki Tuchida, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo and Tokico, Ltd., Kanagawa, both of, Japan

Filed Jun. 25, 1980, Ser. No. 162,792
Claims priority, application Japan, Jul. 10, 1979, 54-87331
Int. Cl.³ F04B *49/06*
U.S. Cl. 417—13 **10 Claims**



1. An oil-cooled compressor, comprising:

a compressor member, having a suction side and a discharge side, for compressing a gas to be compressed, said compressor member having means for drawing said gas to be compressed from a source into said suction side and discharging compressed gas from said discharge side;

a motor for driving said compressor member;

an oil tank having an oil separator for removing oil from the compressed gas discharged from said discharge side of said compressor member, coupled to said discharge side of said compressor member;

means, responsive to the temperature of said oil, the temperature of said gas to be compressed and the pressure of said discharged gas, for turning the motor off only when the difference between the temperature of said oil and the temperature of said gas to be compressed exceeds a predetermined temperature difference and the pressure of the discharged gas exceeds a first predetermined pressure; and

means, responsive to the pressure of said discharged gas, for throttling said discharged gas in a closed path communicating with said suction side of said compressor member when the pressure of said discharged gas is within a pressure range higher than said first predetermined pressure, whereby said discharged gas and said oil are heated by the operation of said compressor member.

4,358,248

SONIC PUMP FOR PUMPING WELLS AND THE LIKE EMPLOYING DUAL TRANSMISSION LINES

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

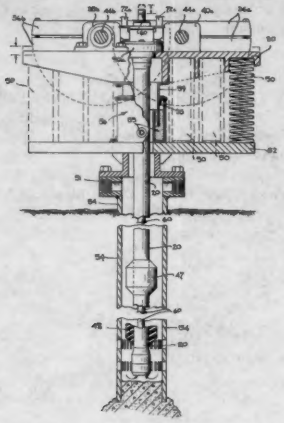
Filed Dec. 11, 1979, Ser. No. 102,857
Int. Cl.³ F04F *7/00*
U.S. Cl. 417—53 **17 Claims**

1. In a sonic pumping system for pumping liquid through a tubular string forming a conduit for said liquid , said system including means for generating vibrational energy at a sonic frequency coupled to one end of said string to effect resonant

longitudinal vibration of said string, said string functioning as a transmission line for said energy, and valve system means mounted along said string for impelling liquid in response to said vibratory energy to effect the pumping action, the improvement comprising:

a rod string coextensive with said tubular string and

means for connecting said rod string to said tubular string such that said two strings vibrate in phase unison with each other to form a vibrating circuit which vibrates in a



longitudinal resonant standing wave vibration mode, the impedances of said strings to lateral vibrations being substantially different,

whereby said rod string forms a second transmission line for said energy, thereby increasing the Q (quality factor) of the vibration circuit formed by said two lines and raising the level of the energy at the ends of the lines remote from the energy generating means, lateral vibrations in said two strings being out-of-phase with each other such that they tend to cancel each other out.

4,358,249

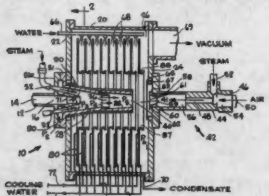
VACUUM CHAMBER WITH A SUPERSONIC FLOW AERODYNAMIC WINDOW

Clark L. Hanson, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 14, 1980, Ser. No. 196,998

Int. Cl.³ F04F *5/00*

U.S. Cl. 417—179 **10 Claims**



1. Apparatus for creating and maintaining a vacuum in a primary chamber which has an opening to the atmosphere or other region of higher gas pressure, by formation of an aerodynamic window before said opening, said apparatus comprising:

wall means defining said primary chamber, said primary chamber adapted to be coupled to a source of vacuum pressure, and having a wall thereof provided with an orifice which communicates with the atmosphere or said region of higher gas pressure;

ejector means connectable to a source of superheated steam for ejecting superheated steam into said primary chamber in the direction toward said orifice;

mixing chamber means for mixing superheated steam with gas from the atmosphere, said mixing chamber means being coupled in fluid communication with said orifice, and having an aperture communicating with the atmosphere or said region of higher gas pressure;

nozzle means for injecting superheated steam into said mixing chamber means, said nozzle means being connectable to a source of superheated steam;

cooling means mounted to the inside of said primary chamber for effecting the condensation of superheated steam introduced into said primary chamber from said ejector means and said mixing means, said condensation thereby enhancing the vacuum condition of said primary chamber; and

drain means connectable to said primary chamber for removing the condensate from said primary chamber without disturbing the vacuum condition of said primary chamber,

whereby superheated steam is introduceable into the primary chamber from said ejector means to collide with the mixture of atmospheric gas and superheated steam injected into the primary chamber from said mixing chamber means to form an aerodynamic window in front of said primary chamber orifice which restricts the flow of gas into said primary chamber from the atmosphere or other region of higher gas pressure.

4,358,250

APPARATUS FOR HARNESSING AND STORAGE OF WIND ENERGY

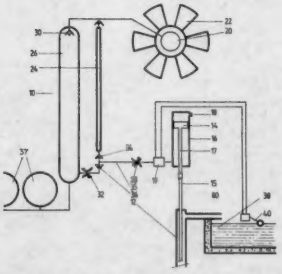
Barrett M. M. Payne, 21 Portland Dr., Umhlanga Rocks, South Africa (4320)

Filed Jun. 3, 1980, Ser. No. 156,269

Claims priority, application South Africa, Jun. 8, 1979, 79/2834

Int. Cl.³ F04B *49/08, 7/02*

U.S. Cl. 417—302 **1 Claim**



1. A wind driven compressor and compressed gas storage system comprising a compressor and wind driven energising means therefor, a first, small capacity reservoir, a second large capacity reservoir connected in parallel to the compressor and a compressed gas demand, valves means adapted to allow compressed gas to by-pass the large capacity reservoir when the compressor output is just sufficient to satisfy the compressed gas demand, to allow charging of the large capacity reservoir when the compressor output exceeds the demand and to allow the discharge, to compressed gas demand, of compressed gas stored in the large capacity reservoir when the compressor output is insufficient to satisfy the demand, the

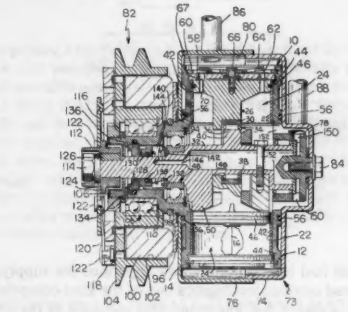
valves means comprising a check valve in the large capacity reservoir inlet, a regulator in the large capacity reservoir outlet which is adapted to release the compressed gas stored in the large capacity reservoir to the compressed gas demand when the pressure in the line between the regulator and the compressed gas demand falls below a predetermined minimum and a check valve in the outlet of the small capacity reservoir which is adapted to prevent movement of compressed gas from the outlet of the large capacity reservoir to the small capacity reservoir.

4,358,251

SPLIT CRANKCASE RADIAL AUTOMOTIVE COMPRESSOR

Edwin L. Gannaway, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 939,877, Sep. 5, 1978, Pat. No. 4,273,519.
This application Sep. 29, 1980, Ser. No. 191,513
Int. Cl.³ F04B *1/18*
U.S. Cl. 417—319 **5 Claims**



1. An automotive radial compressor comprising:
a crankcase having at least three radially oriented cylinders therein, said crankcase being of the split type comprising two halves joined together at an interface lying in a plane axially intersecting said cylinders along their centerlines such that each of the cylinders is defined by a pair of semicylindrical recesses in the respective halves of the crankcase,
a crankshaft rotatably received in said crankcase,
a clutch assembly including a drive pulley rotatably supported on one side of said crankcase, said clutch assembly including means for selectively drivingly connecting said pulley and crankshaft,
a plurality of pistons received in respective said cylinders and connected to said crankshaft, and
a cylindrical liner in each of said cylinders having inner walls against which said pistons slide, said liners each having an outer surface enclosed within said crankcase and which is contacted around its periphery by the confronting surfaces of the respective pair of semicylindrical recesses, said liners serving to align the semicylindrical recesses of the respective pairs in a tangential direction relative to the axis of said crankshaft.

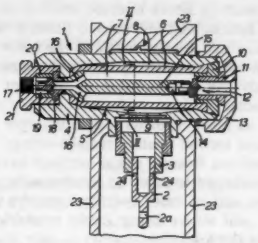
4,358,252

DIAPHRAGM PUMPS

Bernard E. Hart, Salisbury, England, assignor to Harben System Limited, Salisbury, England

Filed Jun. 24, 1980, Ser. No. 162,597
Claims priority, application United Kingdom, Jul. 18, 1979, 7924979
Int. Cl.³ F04B *43/10*
U.S. Cl. 417—387 **10 Claims**

1. A pump comprising a body defining a chamber, a diaphragm in said chamber separating said chamber into a drive chamber and a pump chamber, said pump chamber being provided with an inlet and an outlet for fluid tc be pumped, one-way valve means mounted in each of said inlet and said outlet, said drive chamber having an inlet for driving fluid which is under pressure and on which the pressure is relieved alternately, said inlet being associated with a valve for closing said inlet, said valve including a valve member movable between an open position and a closed position closing said inlet,



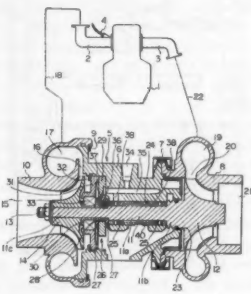
said valve member being in its open position under normal operating conditions of said pump and being arranged to be contacted by said diaphragm if a high pressure subsists in said pump chamber when the pressure in said drive chamber is relieved to move said valve member to its closed position, and means responsive to movement of said valve member to its closed position for supplying driving fluid to an exhaust outlet to relieve the pressure on said valve member for so long as said valve member remains in its closed position.

4,358,253

TURBOCHARGER FOR USE IN AN INTERNAL COMBUSTION ENGINE

Hiroshi Okano, Mishima, and Masami Yamazaki, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 21, 1980, Ser. No. 169,523
Claims priority, application Japan, Apr. 1, 1980, 55/41142
Int. Cl.³ F04B *17/00*; F16C *7/04, 1/24*
U.S. Cl. 417—407 **12 Claims**



1. A turbocharger comprising:
a housing forming therein a cylindrical bore which has an inner wall and a uniform inner diameter over the entire length thereof;
a rotary shaft having a central portion which has a uniform outer diameter and passes through said cylindrical bore;
an impeller fixed onto one end of said rotary shaft;
a turbine wheel fixed onto the other end of said rotary shaft;
a first hollow cylindrical floating radial bearing inserted between said rotary shaft and the inner wall of said cylindrical bore;

a second hollow cylindrical floating radial bearing inserted between said rotary shaft and the inner wall of said cylindrical bore and arranged to be spaced from said first floating radial bearing, each of said first and second floating radial bearings having an outer diameter which is slightly smaller than the inner diameter of said cylindrical bore, and having an inner diameter which is slightly larger than the outer diameter of said central portion of said rotary shaft;

a hollow cylindrical sleeve inserted between said first floating radial bearing and said second floating radial bearing and between said rotary shaft and the inner wall of said cylindrical bore and having an outer diameter which is substantially the same as that of said first and second floating radial bearings, said sleeve having opposed end faces and an inner diameter which is larger than that of said first and second floating radial bearings, such of said first and second floating radial bearings having an inner end face arranged to face the corresponding end face of said sleeve, and an outer end face opposite to said inner end face, said sleeve being freely rotatable and freely movable in the axial direction;

first stop means arranged on said rotary shaft and cooperating with the outer end face of said first floating radial bearing; and,

second stop means arranged on said rotary shaft and cooperating with the outer end face of said second floating radial bearing, said first and second stop means being arranged to loosely support said first and second floating radial bearings and said sleeve for restricting the axial movement of said first and second floating radial bearings and said sleeve.

4,358,254

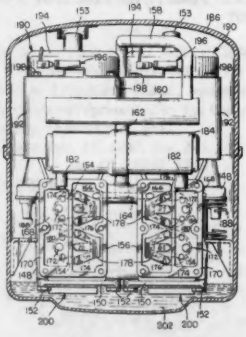
VARIABLE CAPACITY COMPRESSOR

Billy B. Hannibal, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 938,940, Sep. 1, 1978, Pat. No. 4,252,506. This application Sep. 22, 1980, Ser. No. 190,622

Int. Cl.³ F04B *35/04;* **H02K** *16/02*

U.S. Cl. 417—419 **12 Claims**



1. A refrigeration compressor comprising:

an outer housing having a lubricant sump in the lower portion thereof,

a single integral crankcase supported within said outer housing for limited movement relative thereto so as to at least partially isolate vibration and movement of said crankcase from said outer housing,

a pair of crankshafts rotatably supported in said crankcase, said crankshafts being generally parallel to each other and disposed in side-by-side relationship.

at least two fluid pump means driven respectively by said crankshafts, each of said pump means including a suction chamber and a discharge chamber rigidly connected to said crankcase,

fluid inlet and outlet means for providing refrigerant flow to and from said pump means, said fluid inlet and outlet means including at least one of a refrigerant suction conduit and a refrigerant discharge conduit within said housing connected commonly to said suction chambers or said discharge chambers, respectively,

a pair of independently controlled electric motor means respectively for rotating said crankshafts, and

means for pumping lubricant from said sump to lubricate the compressor.

4,358,255

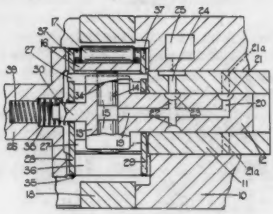
LIQUID FUEL INJECTION PUMPING APPARATUS

Colin P. Brotherston, Rainham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 9, 1980, Ser. No. 110,743

Int. Cl.³ F04B *19/00, 29/00*

U.S. Cl. 417—462 **10 Claims**



1. A liquid fuel injection pumping apparatus for supplying fuel to internal combustion engines and of the kind comprising a body part, a rotary distributor member mounted in the body part and arranged in use, to be driven in timed relationship with an engine with which the apparatus is associated, a transverse bore formed in the distributor member, a plunger in said bore, a cam follower positioned at the outer end of said plunger for engagement with a cam surface formed on a cam ring surrounding the distributor member, stop means for limiting the outward movement of the plunger and passage means for conveying fuel to and from said bore during rotation of the distributor member, characterised in that the distributor member is axially movable within the body part and the apparatus also comprises means for varying the axial setting of the distributor member, and said stop means comprises complementary inclined surfaces on the plunger and a part which is rotatable with the distributor member but which is axially fixed within the body part, whereby as the distributor member is moved axially within the body part the amount by which the plunger can move outwardly whilst fuel is supplied to the bore will vary.

4,358,256

FUEL INJECTION PUMPING APPARATUS

John R. Jefferson, Rainham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 13, 1981, Ser. No. 224,493

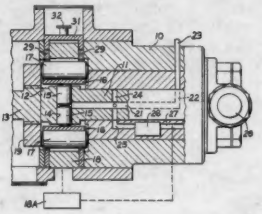
Claims priority, application United Kingdom, Feb. 2, 1980, 8003565

Int. Cl.³ F02D *1/04*

U.S. Cl. 417—462 **4 Claims**

1. A liquid fuel injection pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising a housing, a rotary distributor member mounted in the housing and adapted in use to be driven in timed relationship with an associated engine, a bore formed in the distributor member, a pumping plunger located in said bore and arranged to be moved inwardly by the action of a cam located within the

housing, means for supplying fuel to said bore to effect outward movement of the plunger, passage means for conveying fuel from said bore to an outlet during the inward movement of the pumping plunger by said cam, speed responsive means for adjusting the setting of said cam so that the commencement of delivery of fuel through said outlet will vary in accordance with the speed at which the distributor member is driven, stop means operable to determine the maximum outward movement of the plunger, thereby to control the maximum amount of fuel which can be supplied to the associated engine, said stop means



comprising a movable member for engagement by said plunger or a part associated therewith, a lever pivotally mounted on said movable member, a stop member carried by the housing, said lever having a contoured stop surface for engagement with said stop member, said stop surface being shaped so that upon angular movement of said lever, said movable member will move to vary the maximum outward movement of the plunger and means connecting said cam with said lever whereby movement of the cam under the action of the speed responsive means will effect angular movement of said lever and hence adjustment of said cam.

4,358,257

PISTON PUMP INSTALLATION AND METHOD OF OPERATING THE SAME

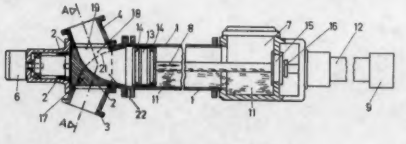
Niklaus Seiler, and Hanspeter Seiler, both of Erlinsbach, both of Switzerland, assignors to Maschinenfabrik Meyer AG, Deitingen, Switzerland

Filed Jan. 30, 1978, Ser. No. 873,699

Claims priority, application Switzerland, Feb. 4, 1977, 1421/77

Int. Cl.³ F04B *15/02, 7/02*

U.S. Cl. 417—517 **12 Claims**



1. A piston pump installation for conveying materials, especially sludge-type materials and granulated and solid materials with added fluid, comprising:

a piston cylinder unit;

said piston and cylinder unit comprising at least one cylinder;

a piston arranged for axial reciprocating movement in said cylinder;

said cylinder having a front end and a rear end;

a valve provided at the front end of said cylinder for controlling feed of the conveyed material out of the front end of said cylinder;

a drive and control device for the piston and cylinder unit located at the rear end of the cylinder;

a suction main and a delivery pipe located to opposite sides of said valve;

said valve at the front end of said cylinder being structured as a movable valve unit operatively associated at one side thereof with said suction main and at the other side thereof with said delivery pipe;

said movable valve unit including a valve body with an inlet orifice and a cutting edge as well as an overlapping surface;

the inlet orifice of the valve body constituting a flow connection between the suction main and the cylinder as well as between the cylinder and the delivery pipe; and

a pressurized buffer vessel safety means at the rear of said cylinder for providing a barrier medium which is in continuous contact with said piston for balancing the pressure of the piston and cylinder unit.

4,358,258

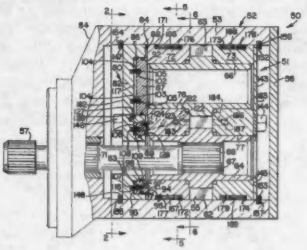
HIGH PRESSURE GEAR PUMP OR MOTOR WITH AXIAL RETAINING MEANS AND RADIAL BALANCING MEANS

John L. Nagely, Sidney, Ohio, assignor to Fluid Energy Systems Corporation, Sidney, Ohio

Continuation of Ser. No. 55,332, Jul. 6, 1979, abandoned. This application Aug. 10, 1981, Ser. No. 291,285

Int. Cl.³ F04C *2/18, 13/00, 15/00;* **F03C** *2/08*

U.S. Cl. 418—71 **18 Claims**



1. In a liquid displacement device including a housing having a cavity therein and an inlet and outlet communicating with said cavity, said liquid displacement device also including an internal unit assembly mounted in said cavity are removable as a unit therefrom through an end of said cavity, said internal unit assembly including a pair of meshed gears disposed between and rotatably supported by a pair of adjoining end plates, means carried by said internal unit assembly for holding said internal unit assembly in assembled relation, said gears and end plates defining high and low pressure zones in said cavity adjacent to said outlet and inlet, respectively, when said internal unit assembly is mounted in said cavity and said device is in operation, and said internal unit assembly including thrust means engaging at least one of said end plates and operable to provide a force preventing separation of said end plates from predetermined positions with respect to the side faces of said gears when said liquid displacement device is in operation, the improvement of retaining means mounted in said cavity and adapted to be engaged by said thrust means so that said internal unit assembly is retained in a predetermined position in said housing cavity with the inlet and outlet in said housing in substantial alignment with said high and low pressure zones, respectively, said retaining means also being adapted to transmit to said housing a portion of the axial component of the force from said high pressure zone tending to separate said end plates from said predetermined positions when said device is in operation and the pressure in said high pressure zone exceeds a predetermined value.

4,358,259

ROTARY PISTON ENGINE SEALING MECHANISMS

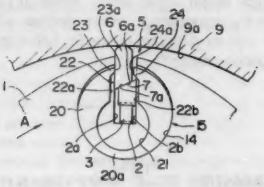
Yasuyuki Morita, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Feb. 15, 1980, Ser. No. 121,963

Claims priority, application Japan, Feb. 16, 1979, 54-19202[U]

Int. Cl.³ F01C *19/04, 19/08*

U.S. Cl. 418—122 **8 Claims**



1. Rotary piston engine including a casing which comprises a rotor housing having an inner wall of trochoidal configuration and a pair of side housings having inner walls and secured to the opposite sides of the rotor housing to define a rotor cavity in the casing, a rotor of substantially polygonal configuration having opposite side surfaces and disposed in said rotor cavity for rotation with apex portions in sliding engagement with the inner wall of the rotor housing, apex seal means provided in each apex portion of the rotor and comprising a sealing groove formed in the rotor at the apex portion to extend in axial direction of the rotor, an elongated sealing piece and an elongated support piece disposed in said sealing groove in a superposed relationship substantially throughout their lengths with said sealing piece faced to the inner wall of the rotor housing, spring means disposed between the support piece and the sealing groove to bias the sealing and support pieces toward the inner wall of the rotor housing, corner seal means provided in each side surface of the rotor at each apex portion, said corner seal means comprising a corner seal recess formed in the side surface at each apex portion, a corner seal member of one piece construction fitted to the corner seal recess and having an axially extending slit for receiving an end portion of the apex seal means and spring means for biasing the corner seal member toward the inner wall of the side housing, said slit of the corner seal member having a narrow portion of a width which is smaller than width of the sealing groove of the apex seal means and a wide portion of a width which is not smaller than the width of the sealing groove of the apex seal means, said narrow portion of said slit of the corner seal member being opposed to only one of the sealing and support pieces of the apex seal means with a slight clearance therebetween.

4,358,260

ROTARY INTERMESHING GEAR MACHINE WITH PRESSURE-BALANCING INCLUDING RESILIENT AND NON-EXTRUDABLE SEALING MEMBERS

Philip G. Joyner, Brockworth, England, assignor to Dowty Hydraulic Units Limited, Cheltenham, England

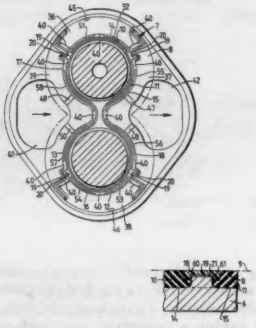
Filed Jun. 10, 1980, Ser. No. 158,154

Claims priority, application United Kingdom, Jun. 16, 1979, 7921041

Int. Cl.³ F01C *1/18, 19/08*; F03C *2/08*; F04C *2/18*

U.S. Cl. 418—132 **16 Claims**

1. A rotary intermeshing gear machine including a casing having a low-pressure port and a high-pressure port, at least two intermeshing rotors housed for rotation in said casing, at least one end plate means associated with said rotors, a pressure-balancing arrangement associated with the end face of said end plate means remote from said rotors and with an adjacent face of said casing, said pressure-balancing arrangement including means defining a plurality of separate grooves provided in one of said faces and sealing means which comprise a plurality of resilient members, each of predetermined length and each disposed in a respective said groove, and which separate one from another a plurality of areas on that one face which are individually subjectable to differing fluid-pressures, lands being formed by the material of said one face which each separate a portion of one said groove from an adjacent portion of another said groove, and recess-defining means being formed in each of said lands, and a single non-extrudable element so located adjacent said resilient members



by engagement with said grooves and with said recess-defining means that said reslient members are all in substantially full length engagement with said single element whereby together said element and members establish fluid-sealing between said end face and said adjacent face, and those portions of said element which engage said recess-defining means each forming a bridge crossing from a said portion of one said groove to an adjacent said portion of another said groove.

4,358,261

MULTI-EXTRUSION DIE ASSEMBLY FOR THERMOPLASTIC MATERIALS

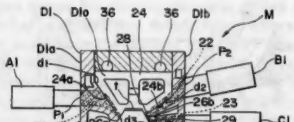
Masahiko Ohki, Toyota, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Aug. 21, 1981, Ser. No. 295,081

Claims priority, application Japan, Aug. 28, 1980, 55-119145

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—131.1 **2 Claims**



1. A multi-extrusion die assembly for use in a multi-extrusion arrangement including at least three extruders centripetally arranged in the same vertical plane for extruding thermoplastic material, and one die box coupled to each of extruding ports of said extruders, said multi-extruding die assembly comprising a first introducing passage formed by connecting the extruding port of one of said extruders to one side face of said die box for introducing the thermoplastic material extruded from said extruder into said die box along a path aligned with an extrusion line of said extruder in widthwise symmetrical relation with respect to said extrusion line, a second and a third introducing passages formed by respectively connecting the extrud-

ing ports of the other two of said extruders to the other side face of said die box for introducing thermoplastic material extruded from said the other two of said extruders into said die box along paths aligned with extrusion line of said extruders in widthwise symmetrical relation with respect to said extrusion lines, a block having a V-shaped cross section and detachably fitted into a corresponding recess formed in the die box from the upper surface of said die box so as to form upper half portions of said first and second introducing passages, a lower box detachably fitted into the die box from the bottom surface of said die box to form a lower half portion of said third introducing passage, and a preformer also detachably fitted into the die box from the bottom surface of said die box in such a manner that an upper edge of said preformer is spaced by a predetermined distance from a corresponding edge of said block, with an outlet port of said first introducing passage which extends over said block and said die box being coupled to a preforming opening formed in one tapered face of said preformer, and with outlet ports of said second and third introducing passages which extend over said block, said die box and said lower box being respectively coupled to corresponding preforming openings formed in the other tapered face of said preformer, said block being depressed to be held in position in the die box through a plurality of taper pins selectively projected from or retracted into the die box by first driving means mounted on said die box, said lower box being pushed up to be held in position by a taper pin driven by second driving means through a lever pivotally mounted on said die box, said preformer being pushed up and held in position through wedge members selectively advanced or retracted by third driving means mounted on said die box.

4,358,262

FILTER OR TOOL-CHANGING DEVICE FOR SCREW EXTRUDERS

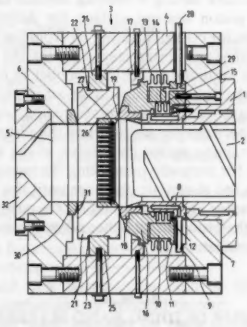
Adolf Herbert, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 319,890

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043217

Int. Cl.³ B29F *3/00*

U.S. Cl. 425—185 **2 Claims**



1. In a screw extrusion device utilised for extruding plastics materials having an inlet end and an outlet end, a housing securedly mounted on said outlet end, said housing defining an axial flow path for said plastics material, guide means securedly mounted in said housing and extending perpendicularly to said flow path, filter or tool-carrier means displaceably guided on said guide means, an annular pressure element bearing on said filter or tool carrier so as to secure and seal said filter or tool carrier in an operative position, hydraulic pressurizing means acting on said annular pressure element, said hydraulic pressurizing means including an annular pressure chamber, the improvement wherein said annular pressure chamber has inner and outer wall members, said wall members each having first and second ends, said first end of each said wall member being mounted on said annular pressure element and said second end of each said wall member being mounted on said housing, said inner and outer wall member each being a metal bellows, said bellows being disposed concentrically with one another.

4,358,263

PRESS APPARATUS

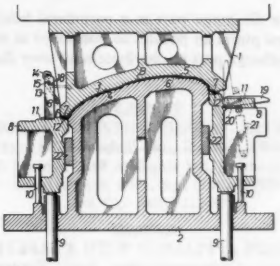
Motoatsu Shiraishi, Sakado; Tatsushi Matsuda, Kawagoe, and Masao Sano, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1981, Ser. No. 286,522

Claims priority, application Japan, Jul. 26, 1980, 55-105914

Int. Cl.³ B29C *17/00*

U.S. Cl. 425—397 **6 Claims**



1. A press apparatus comprising: a lower, stationary die having a convex top surface; an upper die arranged above said lower die for vertical movement relative thereto and having a concave bottom surface facing opposite to and conforming to the convex top surface of said lower die; a blank holder arranged around said lower die for vertical sliding movement relative thereto and normally urged by cushion means to a top limit position in which the top surface of said blank holder is held at a level lower than that of the crest of the convex top surface of said lower die; and a blank support lever arm mounted on the top surface of said blank holder for pivotal movement in a vertical plane and normally urged to a horizontal position to support a blank in a horizontal position in cooperation with the crest of the convex top surface of said lower die, said blank support lever arm being arranged so as to be tilted down by said upper die out of the path of down-stroke movement thereof to allow the blank to be pressed down.

4,358,264

CENTRIFUGAL MOLDING APPARATUS FOR MANUFACTURING COMPOSITE MATERIAL PIPES

Masahiko Yamamoto, Nishinomiya; Yoshinori Nishino, Yamato Takada; Masao Wada, Sakurai, and Tomio Ebisu, Osaka, all of Japan, assignors to Hitachi Shipbuilding & Engineering Company Limited, Osaka, Japan

Filed Mar. 18, 1981, Ser. No. 245,034

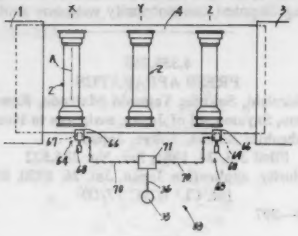
Claims priority, application Japan, Mar. 25, 1980, 55-38566; Apr. 4, 1980, 55-45034; Apr. 4, 1980, 55-46294

Int. Cl.³ B29C *5/04*; B29D *23/08*

U.S. Cl. 425—425 **10 Claims**

1. A centrifugal molding apparatus for manufacturing composite material pipes comprising a rotary mold and operating arm means protrusible and retractable relative to said rotary mold, said operating arm means having, in sequence from the front end thereof, a press roll member for pressing the interior of a pipe being molded, a first resin-liquid dispenser, a second resin-liquid dispenser, a chopped-strand feeder, a third resin-liquid dispenser, a sand smoothing means for smoothing sand

supplied on to resin liquids, a sand supply means, and a roving supply means, said sand supply means including a screw conveyor having an inlet end and a discharge end, said discharge



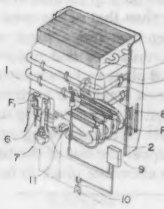
end having a discharge port in a peripheral housing of said conveyor, and plural air nozzles so positioned as to cooperate with said discharge port to distribute sand over the surface of said mold.

4,358,265

COMBUSTION APPLIANCE WITH A SAFETY DEVICE

Eiichi Tanaka, Yamatokoriyama; Koro Furumai, Ikomo; Masahiro Indo, Tenri, and Norio Kawabata, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 3, 1980, Ser. No. 156,196
Claims priority, application Japan, Jun. 15, 1979, 54/76133; Aug. 20, 1979, 54/106344
Int. Cl.³ F23N *5/24*
U.S. Cl. 431—76 4 Claims



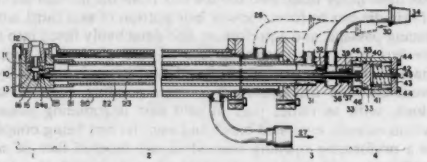
1. A combustion appliance with a safety device comprising:
a combustion chamber;
a burner means in said combustion chamber;
an oxygen partial pressure sensor comprised of a sintered ceramic body of a transition metal oxide or rare earth metal oxide the resistance of which varies in response to the oxygen partial pressure of the ambient atmosphere in which the sensor is positioned, said oxygen partial pressure sensor being positioned in said combustion chamber downstream of said burner means and at a distance from said burner means for, when the flame formed by said burner means is that for normal combustion, being spaced from the flame and, when the flame is elongated due to an oxygen deficiency, for being enveloped by the flame; and
means connected to said oxygen partial pressure sensor for stopping the supply of fuel to said burner means in response to an output signal from said oxygen partial pressure sensor indicating an oxygen deficiency.

4,358,266

FLUID FUEL BURNER WITH AUTOMATIC FUEL SHUT-OFF VALVE

Richard S. Pont, and John Gray, both of Edinburgh, Scotland, assignors to Laidlaw Drew & Co. Ltd., Edinburgh, Scotland

Filed Nov. 14, 1979, Ser. No. 94,133
Int. Cl.³ F23N *1/02*
U.S. Cl. 431—90 6 Claims



1. In a fluid fuel burner having an atomizing nozzle receptive of a supply of fuel through a fuel tube therein and receptive of a supply of air under pressure through an air tube therein for atomizing the fuel, the improvement comprising fuel valving means responsive to the pressure of the air in the air tube for normally preventing the passage of fuel from the fuel tube to the nozzle until the air pressure rises above a given value and for shutting off the passage of fuel from the fuel tube to the nozzle when the air pressure falls below a given value, the fuel valving means comprising the fuel tube having a first diameter and a nozzle including a fuel feed passage having a diameter smaller than that of the fuel tube and disposed concentrically with respect thereto, a fuel shut-off rod disposed in the fuel tube and having a diameter less than that of the fuel tube to enable fuel to flow therearound and through the fuel tube and having a valve head at one end thereof nearest the nozzle and configured to close the fuel passage when disposed therein and means mounting the rod for sliding movement in the fuel tube, in response to changes in air pressure, between the first position wherein the valve head extends into the fuel feed passage closing same to the supply of fuel and a second position wherein the valve head is retracted into the fuel tube enabling fuel to flow therearound and into the fuel feed passage, the mounting means comprising a piston connected to the other end of the rod and having a bearing surface thereon, means including the piston bearing surface for defining piston air chamber, means for communicating air from the air tube to the piston air chamber and spring means biasing the piston against the force of the air in the piston air chamber to normally maintain the rod in the first position until the air pressure rises above a given value, wherein the air communicating means comprises an air passage between the air tube and the piston air chamber and a second valving means responsive to the air pressure in the air passage for normally preventing the passage of air from the air tube to the piston air chamber until the pressure rises above a given value and for shutting off the passage of air from the air tube to the piston air chamber when the air pressure falls below a given value.

4,358,267

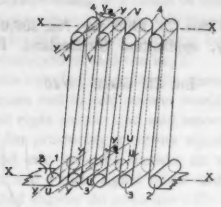
DEVICE FOR GUIDING BAND MATERIAL AND APPLICATIONS THEREOF

Charles Brun, Montataire, France, assignor to Union Siderurgique du Nord et de l'Est de la France, Paris, France

Filed Mar. 25, 1981, Ser. No. 247,551
Claims priority, application France, Mar. 26, 1980, 80 06670
Int. Cl.³ F27B *9/28*; B65H *17/22, 75/02*; C21D *9/52*
U.S. Cl. 432—59 9 Claims

1. A device for guiding a band of material, comprising at least two series of rollers having axes of rotation contained in different horizontal planes and means supporting said series of rollers, the band passing alternately from a roller of one series to a roller of the other series, wherein, when viewed in projection on a horizontal plane, the axes of the rollers of one of said

series are parallel to each other and make with the axes of the rollers of the other of said series an acute angle a whose bisector is perpendicular to the mean direction of travel of the band through the device, the axes of the rollers of said other series being parallel to each other.

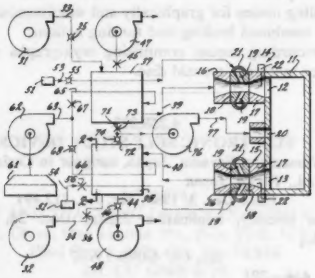


4,358,268

FURNACE SYSTEM WITH REHEATED FLUE GAS RECIRCULATION

Warren H. Neville, 6411 Vinevale #E, Bell, Calif. 90201

Filed Dec. 15, 1980, Ser. No. 216,242
Int. Cl.³ F27D *17/00*
U.S. Cl. 432—180 **8 Claims**



1. A furnace system comprising:

a heating chamber having a first and second opening therein;

a first and second burning chamber coupled to each of said first and second openings respectively;

a first regenerator coupled to said first burning chamber and a second regenerator coupled to second burning chamber;

each of said regenerators having a first, second and third opening and having a heat absorbing mass enclosed therein;

said first and second openings on each of said regenerators being disposed on one side of said mass and said third opening being disposed on the opposite sides of said mass;

first means for coupling fuel to each of said respective burning chambers;

each of said first openings on each of said regenerators having combustion air coupled thereto;

each of said third openings on each of said regenerators being coupled to a respective one of said burning chambers;

second means for controlling said first means and said first, second and third openings on said respective first and second regenerators so that, as fuel is coupled to said first burning chamber, combustion air is coupled into said first opening and out of said third opening of said first regenerator to said first burning chamber and exhaust gas, leaving said second burning chamber, is coupled into said third opening and out of said second opening of said second regenerator into the atmosphere, and so that as fuel is coupled to said second burning chamber, combustion air is coupled into said first opening and out of said third opening of said second regenerator to said second burning chamber and exhaust gas, leaving said first burning chamber, is coupled into said third opening and out of said second opening of said first regenerator into the atmosphere;

each of said regenerators having a fourth opening disposed on the same side of said heat absorbing mass as said third opening;

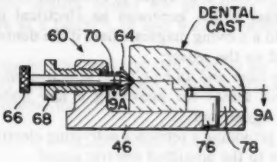
third means for selectively supplying, one at a time, secondary combustion air to one of said fourth openings on said respective regenerator.

4,358,269

PLASTERLESS MOUNTING DENTAL ARTICULATOR

Louis E. Hay, 847 Woodhill Rd., Dayton, Ohio 45431, and Roger W. Mercer, 1340 Arlington Dr., Fairborn, Ohio 45324

Filed Mar. 9, 1981, Ser. No. 241,580
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—60 **23 Claims**



1. A dental articulator for releasably mounting and adjusting matched upper and lower dental casts, which were poured in impressions taken in the oral cavity of a patient for use in the fabrication of a dental prosthesis, without the use of mounting plaster, said articulator comprising:

(a) an articulator body having a base element, at least one vertical element, and a normally horizontal leaf element pivotally supported at the upper end of said vertical element to be superimposed with said base element;

(b) a lower dental cast mounting jig supported by the base element of said articulator body, said lower mounting jig having a plane upper surface to be proximate to the plane surface on the base of said lower dental cast, and further having a plurality of upwardly extending locating stops for engaging a like number of cavities in said lower dental cast, at least one of said locating stops being adjustable to releasably hold said lower dental cast in position on the plane upper surface on said lower mounting jig; and,

(c) an upper dental cast mounting jig supported by the leaf element of said articulator body, said upper mounting jig having a plane lower surface to be proximate to the plane surface on the base of said upper dental cast, and having a plurality of downwardly extending locating stops for engaging a like number of cavities in said upper dental cast, at least one of said locating stops being adjustable to releasably hold said upper dental cast in position on the plane surface of said upper mounting jig, and further having adjusting means for adjusting said mounted upper dental cast in centric anatomical relationship with said lower mounted dental cast.

4,358,270

DENTAL INSTRUMENT RETRACTION ACTIVATOR

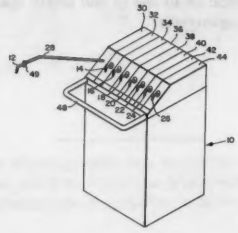
Manfred Schmidt, Karlsruhe, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.

Filed May 15, 1980, Ser. No. 150,058

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3073883

Int. Cl.³ A61C *1/14*

U.S. Cl. 433—78 **1 Claim**



1. A dental instrument retraction activator comprised of:
at least one dental instrument characterized by having a magnetic field;
a retraction mechanism which is activated by an electrical signal;
a supply line attached to the dental instrument and running to the retraction mechanism;
a magnetic sensor is arranged in proximity to the retraction mechanism which generates an electrical signal in response to a moving magnetic field if the dental instrument is passed by the sensor;
a low pass filter and an amplitude selective circuit in series with said sensor for providing a low noise amplitude electric signal; and
means for providing a retractor activating electrical signal in response to the amplified electric signal.

4,358,271

METHOD OF PREPARING CERAMIC-COATED DENTAL PROSTHETIC CONSTRUCTIONS

Franz Sperner, Hanau, Fed. Rep. of Germany, and Heidi Brink, deceased, late of Gründau, Fed. Rep. of Germany (by Rainer Brink, heir), assignors to Heraeus Edelmetalle GmbH, Hanau am Main, Fed. Rep. of Germany

Filed Feb. 11, 1981, Ser. No. 233,409

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 3008605

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—201 **1 Claim**

1. In the method of preparing a dental prosthetic construction, including a crown or bridge, by applying a dental ceramic composition to a precious-metal alloy-containing silver, drying it, and firing the same, the improvement wherein the firing is carried out in a reducing atmosphere comprising carbon monoxide which is produced in the firing chamber of the furnace from atmospheric oxygen and placed in the firing chamber.

4,358,272

MOTOR-VEHICLE DRIVING INSTRUCTION AND TESTING APPARATUS

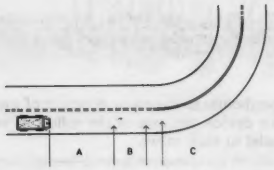
Michel Gurtner, 18B, chemin Francois Chavaz, CH-1213 Onex, Switzerland

Filed Nov. 21, 1980, Ser. No. 209,012

Claims priority, application Switzerland, Feb. 20, 1980, 1351/80

Int. Cl.³ G09B *19/16*

U.S. Cl. 434—62 **6 Claims**



1. A motor vehicle driving instruction and testing apparatus, comprising, in combination:
a disc rotating as a function of time;
means for measuring the turning of the wheels of said vehicle;
warning means activated when said vehicle is simultaneously braked and said wheels are turned;
recording means for graphically and simultaneously recording combined braking and turning actions;
said recording means comprising stylographs adapted to place markings on said disc.

4,358,273

ELECTRONIC SELF-STUDY DEVICE

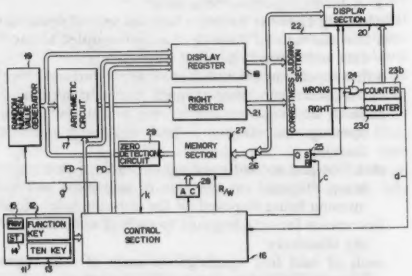
Haruo Yamamoto, Sayama, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,491

Claims priority, application Japan, Dec. 22, 1979, 54-178328[U]

Int. Cl.³ G09B *19/02*

U.S. Cl. 434—201 **7 Claims**



1. An electronic self-study device comprising:
input means including a start key for starting a display of a problem; ten keys adapted to be depressed by a user to input an answer; and a reviewing key adapted to be depressed by a user to again display a problem incorrectly answered by the user;
problem presenting means coupled to said input means and being responsive to operation of said start key to prepare a problem according to random members;
display means coupled to said problem presenting means for displaying the problem prepared by said problem presenting means;

right answer calculating and storing means coupled to said problem presenting means for effecting a calculation with respect to said prepared problem and for storing a right answer corresponding to a result of said calculation;

answer storing means coupled to said input means for storing an answer to said displayed problem inputted by the user through operation of said ten keys;

judging means coupled to said right answer calculating and storing means and to said answer storing means for comparing said right answer and said answer inputted by the user, and for producing a wrong signal when said right answer and said inputted answer do not coincide with each other and a right signal when said right answer and said inputted answer do coincide with each other;

problem storing means coupled to said judging means and to said problem presenting means and being responsive to said wrong signal to store said prepared problem to which said wrong signal corresponds; and

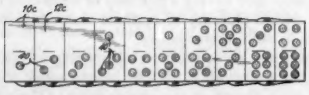
problem readout control means coupled to said input means and to said problem storing means and being responsive to operation of said reviewing key for causing the problem stored in said problem storing means to be read out by the operation of said reviewing key and for delivering said read-out problem to said calculating and storing means and to said display means, whereby when the user inputs an answer to said read-out problem, the correctness thereof is again judged by said judging means.

4,358,274

GAME AND TEACHING DEVICE CONSTRUCTION

Herbert S. Chase, One Lincoln Plz., New York, N.Y. 10023

Filed Sep. 4, 1979, Ser. No. 71,916
Int. Cl.³ G09B *1/16*
U.S. Cl. 434—205 **5 Claims**



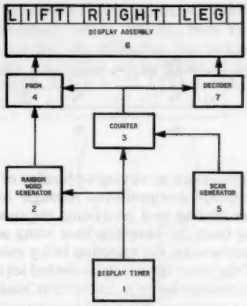
1. A game and teaching aid device construction comprising a plurality of blocks, each in a form having first and second ends and first and second opposite faces, and first and second affixing flexible members, each of said first ends being pivotally affixed to said first member and each of said second ends being pivotally affixed to said second member, said first and second faces defining indicia, said second face translating the indicia of said first face.

4,358,275

ELECTRONIC REACTION TRAINING APPARATUS

Aram C. Paraghamian, Mission, Kans., and Glen F. Long, Richardson, Tex., assignors to Reaction Corporation, Mission, Kans.

Filed Oct. 24, 1980, Ser. No. 200,280
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—258 **12 Claims**



1. A display generator, comprising:

a programmable read-only memory, including addressable data;

random word generator means for addressing said memory;

counter means for addressing said memory; a plurality of character display means for producing alpha-numeric displays as a function of said memory addressable data; and

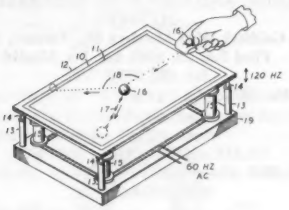
decoder means responsive to said counter for enabling said plurality of character display means to provide a random, visual instruction.

4,358,276

EDUCATIONAL DEVICES

Robert Ehrlich, 10020 Commonwealth Blvd., Fairfax, Va. 22032

Filed Jul. 20, 1981, Ser. No. 285,300
Int. Cl.³ G09B *23/08*
U.S. Cl. 434—302 **11 Claims**



1. An educational device comprising

a. a flat hard surface,

b. a pressure sensitive medium attached to said surface,

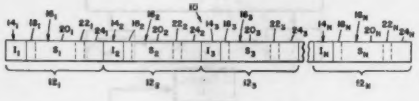
c. at least one ball of sufficient weight, such that when said ball rolls on said pressure sensitive medium, it leaves a visible imprint, hereafter referred to as said ball's trail,

d. a means for producing vibrations of said surface and attached pressure sensitive medium having sufficient amplitude, frequency, and duration, such that the geometric shape and/or darkness of said ball's trail shows periodic features over most of its length.

4,358,277
METHOD AND APPARATUS FOR CONDUCTING AN OPINION SURVEY

William C. Moyes, San Luis Obispo; Russell W. Gerber, Palo Alto, and Richard Ehrbar, Los Osos, all of Calif., assignors to Sunbelt Communications, Ltd., Menlo Park, Calif.

Filed Jun. 26, 1981, Ser. No. 277,820
Int. Cl.³ G09B 7/00
U.S. Cl. 434—322 6 Claims



1. In the art of opinion surveying a plurality of commercially broadcasted popular compositions through human sensory reactions for recording and analyzing responses from a selected sampling base, the sampling base being selected from a plurality of interviewees, the selection being made on the basis of responses of the interviewees to a selected set of interrogatories, the interrogatories being directed to at least age, sex, type of programming preferred as offered by commercial broadcast media, and an average length of time in which said interviewee turns to said commercial broadcast media, a survey apparatus comprising:

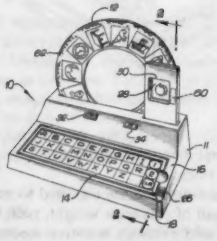
a prerecorded survey medium for presentation to said selected sampling base in human responsive form, said medium including a plurality of sequential bits, each of said bits having an indicia portion and a segment portion and being prerecorded at a substantially volume and playing time to each other of said bits, each segment portion including a familiar portion of a different one of each of said compositions; and

an optoelectronically readable score sheet distributed to each member of said selected sampling base, said score sheet including a plurality of answer locations, each of said answer locations having a plurality of response indicia and being associated with a different one of said bits, each response indicia when marked by said member being indicative of said member's qualitative perception of said familiar portion included in said segment of said bit associated with said answer locations.

4,358,278
LEARNING AND MATCHING APPARATUS AND METHOD

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356

Filed Feb. 25, 1980, Ser. No. 124,316
Int. Cl.³ G09B 7/02
U.S. Cl. 434—337 4 Claims



1. An electronic matching/learning apparatus comprising:

(a) a housing;

(b) a keyboard comprising a plurality of manually operable keys disposed in a generally planar array supported by an upper surface of said housing, said keyboard including means for indicating to the student the significance of each of said keys;

(c) a plurality of lesson modules, each having an image frame area containing a two-dimensional visually perceivable image and an associated data area containing data related to said image in machine readable digital format;

(d) means for holding a selected one of said image frame areas in a generally fixed position relative to said keyboard and displaying its associated image to a student positioned before said keyboard;

(e) means for translating a sequence of data manually input in the form of a sequence of key strokes, each such stroke corresponding to the single actuation of a single key from said keyboard into a first digital phrase, and storing said first digital phrase in a first electronic digital storage register, each different combination of key strokes resulting in a different digital phrase;

(f) means for reading the data contained in the data area related to said selected image frame area, translating said data into a second digital phrase, and storing said second digital phrase in a second electronic digital storage register;

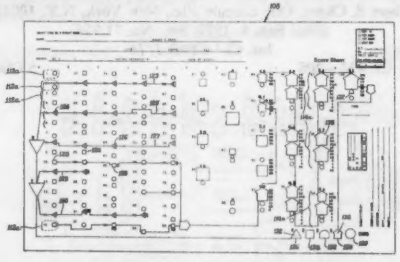
(g) means for comparing said first digital phrase stored in said first electronic digital storage register with said second digital phrase stored in said second electronic digital storage register and for comparing a succession of such second digital phrases derived from a corresponding succession of such lesson module data areas until a positive comparison is obtained; and

(h) means for informing said student whether the result of such comparison is positive or negative.

4,358,279
HONESTY TESTING AND SCORING EVALUATOR

Gregory M. Lousig-Nont, 9325 Grimm La., Edwards, Ill. 61528

Filed Aug. 17, 1981, Ser. No. 293,492
Int. Cl.³ G09B 19/00
U.S. Cl. 434—363 10 Claims



1. An honesty testing and scoring evaluator for determining the attitude toward honesty of individual comprising:

a questionnaire, and an answer and score sheet set;

said questionnaire having a plurality of numbered interrogatories with a plurality of optional answers being printed alongside each interrogatory;

said answer and score sheet set comprising an answer sheet overlying a score sheet, said set having means for transferring a mark placed on the answer sheet to the score sheet;

said answer sheet having a plurality of numbered areas corresponding to said plurality of numbered interrogatories on the questionnaire, each of said areas having defined, markable spaces corresponding to said plurality of optional answers printed alongside each of said numbered interrogatoies; and

said score sheet having a plurality of numbered areas exactly registering and corresponding with said plurality of numbered areas on the answer sheet, said score sheet having in

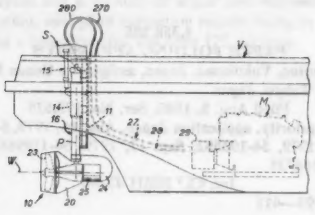
each of its said numbered areas at least one of a plurality of symbols of different predetermined shape in exact registration with at least one of the defined, markable spaces in the corresponding area of the answer sheet, the different shaped symbols indicating different attitudes toward honesty and dishonesty on the part of the individual marking the answer sheet.

4,358,280

DEVICE FOR ROTATIONALLY DRIVING AND STEERING A SCREW-RUDDER OF A FLOATING VEHICLE

Rene H. Jeanson, Auzay, France, and Daniel Vagner, Fontenay le Conte, both of France, assignors to Valeo, Paris, France

Continuation of Ser. No. 865,603, Dec. 29, 1977, abandoned. This application Nov. 19, 1979, Ser. No. 95,600
Claims priority, application France, Jan. 7, 1977, 77 00308
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.³ B63H *5/12*
U.S. Cl. 440—61 **5 Claims**



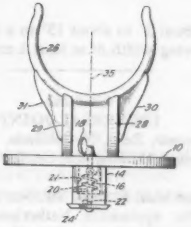
1. In a device for rotationally driving and steering a screw-rudder of a floating vehicle, comprising:
- a support for mounting on a floating vehicle;
- a tubular casing mounted on the support;
- a steering shaft which is mounted for rotation in the tubular casing;
- thrust bearing means supporting the steering shaft in the tubular casing;
- a screw-carrier assembly rigidly suspended from the steering shaft;
- first drive means for rotationally driving a screw carried by said screw-carrier assembly and including at least one hydrostatic receiver unit housed in the screw-carrier assembly, a hydrostatic transmitter unit, and a pair of oil circulation pipes connecting the hydrostatic receiver unit to the hydrostatic transmitter unit; and
- second drive means disposed at the top end of the steering shaft for rotating the steering shaft in the tubular casing in order to steer the screw-rudder; and wherein said pair of oil circulation pipes comprises a pair of ducts inside the steering shaft and a pair of rotating joints interposed between the steering shaft and the tubular casing; said pair of rotating joints and said thrust bearing means being grouped together with said second drive means at the top end of the steering shaft; the improvement in which said pair of rotating joints is disposed immediately below said second drive means, said pair of rotating joints is disposed immediately above said thrust bearing means, centering bearing means supporting the steering shaft in the tubular casing at the bottom end of the tubular casing, said pair of rotating joints comprising a pair of superposed annular recesses in said casing, said second drive means comprising a pinion on said shaft, a rack engageable with said pinion, means to reciprocate said rack to rotate said shaft, said thrust bearing means comprising inner and outer races with anti-friction means therebetween, substantially vertical slide guide means fastened to the support, top and bottom slide shoe means slidable in said slide guide means, said tubular casing being mounted on said bottom slide shoe means and being pivotally mounted on said top slide shoe means, and means acting between said casing and said support to raise and lower said casing, said bottom slide shoe means being adapted to move out of said slide guide means to permit the casing to pivot about said top slide shoe means thereby to lift the screw-carrier assembly out of the water.

4,358,281

WINCH-MOUNTED SAILBOAT OARLOCK

William R. Woodward, 520 E. 76th St., New York, N.Y. 10021

Filed Jun. 20, 1980, Ser. No. 161,269
Int. Cl.³ B63B *17/00*; B63H *16/06*
U.S. Cl. 440—109 **5 Claims**



1. An oarlock for a sailboat equipped with port and starboard winches of the kind having a socket in the top surface thereof for receiving the locking plug of a locking-type detachable winch-driving crank, said oarlock comprising:
- a base member the bottom surface of which is shaped so as to rest on the top surface of a winch in an attitude in which said base member extends over said top surface for bracing thereagainst to maintain parallelism therewith;
- a plug centrally fixed on said base member extending therebelow and equipped with a locking tip portion for locking said base member to the turning portion of said winch while holding said base against movement away from the top portion of the winch;
- means for holding said locking tip portion of said plug in locking position and for enabling it to be displaced therefrom to a position suitable for inserting said plug into said winch and for removing it from the winch, and
- an oar-fulcrum cradle, and
- means for supporting said oar-fulcrum cradle on said base member firmly above said member.

4,358,282

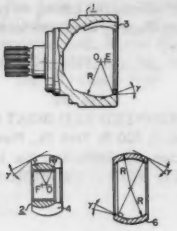
CONSTANT VELOCITY BALL JOINT

Toshiaki Yamamoto, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 2, 1980, Ser. No. 212,337
Claims priority, application Japan, Sep. 18, 1980, 55-129559
Int. Cl.³ F16D *3/34*
U.S. Cl. 464—139 **1 Claim**

1. A constant velocity ball joint comprising: an outer race provided at one axial end with a plurality of ball rolling grooves formed in the inner peripheral spherical surface thereof; an inner race provided at its end opposing to said one axial end with a plurality of ball rolling grooves formed in the outer peripheral spherical surface thereof; a plurality of balls received by said ball rolling grooves; and a cage having outer and inner spherical surfaces disposed between said ball rolling grooves of said outer race and said ball receiving grooves of said inner race and adapted to hold and restrain said balls, characterized in that said inner surface of said outer race and said outer surface of said inner race are chamfered at said ends thereof and said outer and inner surfaces of said cage are cham-

fered at the respective ends thereof corresponding to said outer race end and said inner race end, said chamfering being at an



angle of from about 2° to about 15° to a line tangent to each said end and having width of at least 1 mm.

4,358,283

UNIVERSAL JOINT

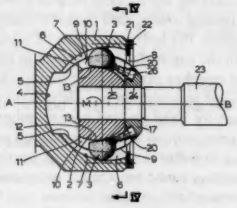
Zvonimir Z. Kumpar, Zeist, Netherlands, assignor to SKF Industrial Trading & Development Co. B.V., Nieuwegein, Netherlands

Filed Mar. 6, 1980, Ser. No. 127,809

Claims priority, application Netherlands, Mar. 16, 1979, 7902092

Int. Cl.³ F16D *3/33*

U.S. Cl. 464—143 **12 Claims**



1. In a universal coupling having an outer ring defining therein a socket, an inner ring accommodated in the socket, said socket having an inner surface which defines therein groove-like outer races, said inner ring having an outer surface which defines therein groove-like inner races, said inner and outer surfaces being adjacent, with each outer race positioned adjacent one inner race thereby defining one full race, and a set of flatted balls each having one flat face and being movably secured in one of said full races for transmitting rotation from the one of said rings to the other ring, the improvement wherein said inner race has an outer surface which is curved, and the flat face of each of said flatted balls engages and freely cooperates with said curved surface.

4,358,284

FIBER-REINFORCED DRIVESHAFT

Helmut Federmann, Bergisch Gladbach, and Joachim Bausch, Dürscheid, both of Fed. Rep. of Germany, assignors to Felten & Guilleaume Carlswerk AG, Cologne, Fed. Rep. of Germany

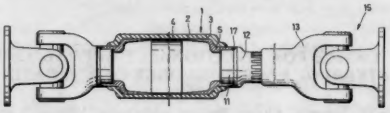
Filed Nov. 3, 1980, Ser. No. 203,670

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951629

Int. Cl.³ F16C *3/00*; F16D *3/16*

U.S. Cl. 464—181 **17 Claims**

1. A drive shaft, particularly for motor vehicles, comprising a pair of rotationally symmetrical hollow end members each having an axially inner cylindrical section and an axially outer cylindrical section which are connected by a transition section, the inner and outer section of each end member having different diameters and the transition section having a wall thickness which increases in direction towards the outer section; and a



tubular shaft member of synthetic plastic material connecting said end members and surrounding said inner section, transition section and all but an end portion of the outer section thereof in mating relationship, said shaft member being reinforced with a plurality of layers of synthetic plastic material—impregnated fiber roving.

4,358,285

PAPER FOLDING APPARATUS

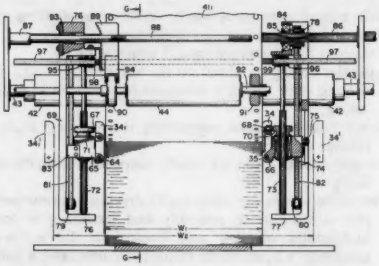
Hitoshi Fujino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,525

Claims priority, application Japan, Aug. 16, 1979, 54-103551; Aug. 16, 1979, 54-103552; Sep. 17, 1979, 54-118966; Nov. 8, 1979, 54-144725

Int. Cl.³ B65H *45/00*

U.S. Cl. 493—411 **2 Claims**



1. A paper folding apparatus for folding continuous paper correspondingly to the folded length thereof and piling the folded paper, having width guide members disposed in opposed relationship with each other on the uppermost surface of the sides of the folded continuous paper for guiding the widthwise inclination of the paper into a predetermined area, pivot shafts provided in the lower portions of said width guide members, swinging means for causing the upper portions of said width guide members to swing about said pivot shafts, vertically moving means for moving said width guide members upwardly or downwardly following the uppermost surface of the folded continuous paper moved upwardly or downwardly correspondingly to the folded width dimension of the continuous paper, and horizontally moving means for parallel-moving at least one of the opposed width guide members leftwardly or rightwardly to a position corresponding to the width dimension of the continuous paper, said swinging means of said width guide members, said vertically moving means and said horizontally moving means being driven independently of one another.

4,358,286

COSMETIC HAIR DYE COMPOSITION BASED ON A POWDER OF VEGETABLE ORIGIN

Jean-Francois Grollier, Paris; Josiane Allec, Pierrefitte; Chantal Fourcadier, Paris; Georges Rosenbaum, Asnieres, and Patrick Darmenton, Villejuif, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 31, 1980, Ser. No. 221,636

Claims priority, application France, Jan. 4, 1980, 80 00093

Int. Cl.[3] A61K *7/13;* C09B *61/00;* A61K *7/06*

U.S. Cl. 8—405 5 Claims

1. A water-dilutable dyeing composition in dry form for application in diluted form to human hair to color said hair comprising an effective amount of a hair dye and between 2 and 95 percent by weight of said composition of a plant extraction residue, as a thickening or opacifying agent for said composition, said residue being the remainder of the extraction of essentially all the active principles present in said plant, said plant being selected from the group consisting of saponaria, ivy, hawthorn, arnica, ruscus, horse chestnut, eucalyptus, horsetail and witch hazel and being extracted with a solvent selected from the group consisting of ethanol, isopropanol, ethylene glycol and a mixture of water and ethylene glycol monoethylether, said plant extraction residue being in powder form having a granulometry less than 125 microns.

4,358,287

ASYMMETRIC 1:2 METAL COMPLEXES OF DIAZO COMPOUNDS

Heinz Wicki, Basel, Switzerland, and Claude Vogel, Laint-Louis, France, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 200,158, Oct. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 153,497, May 27, 1980, abandoned. This application Apr. 13, 1981, Ser. No. 253,683

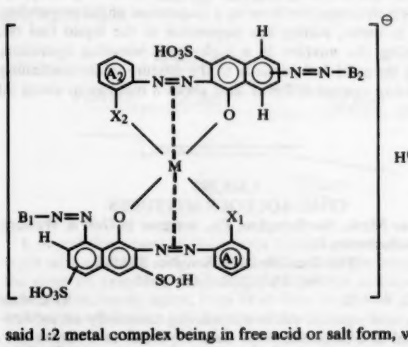
Claims priority, application Switzerland, May 28, 1979, 4946/79; Jan. 7, 1980, 64/80

Int. Cl.[3] C09B *45/00, 45/26*

U.S. Cl. 8—540 39 Claims

1. A 1:2 metal complex of the formula

(I)



said 1:2 metal complex being in free acid or salt form, wherein each of

and

is independently the radical of a diazo component of the benzene series free from fiber-reactive groups, with the proviso that Rings A_1 and A_2 together contain a maximum of one sulfo group, each of B_1 and B_2 is independently the radical of a coupling component of the benzene or hydroxyquinoline series free from fiber-reactive groups, each of X_1 and X_2 is independently —COO— or —O—, and M is a metal capable of forming a 1:2 metal complex.

4,358,288

FERTILITY INDICATOR SYSTEM CONTAINING ANTHOCYANIN PIGMENT

Dorothee F. E. Goldman, 3503 Shepherd St., Chevy Chase, Md. 20815

Filed Sep. 16, 1981, Ser. No. 302,848

Int. Cl.[3] G01N *33/52, 33/50*

U.S. Cl. 23—230 B 30 Claims

1. Method for evaluating fertility in females, said method comprising:

(a) providing a fertility evaluation medium comprising an anthocyanin pigment and a substrate for facilitating the generation of a color response in the pigment;

(b) contacting a mucin-containing body fluid of a female with said fertility evaluation medium in the presence of vaginal fluid or substances found in vaginal fluid, including ascorbic acid and a sugar; and

(c) determining from a resulting color change in said fertility evaluation medium whether said female is infertile, or whether fertility in said female is imminent, or whether said female is actually fertile.

30. A fertility evaluation kit suitable for use in the evaluation of fertility in females, said kit including a first, second and third component, said first component comprising an anthocyanin pigment and a substrate for facilitating the generation of a color response in said pigment, said second component comprising ascorbic acid and a sugar selected from the group consisting of glucose, fructose, sucrose, galactose, sorbose, arabinose and dextrose, said third component comprising a color comparison chart for comparing colors produced on said substrate with color displayed on the chart.

4,358,289

METHOD AND APPARATUS FOR PRODUCING CARBON BLACK

Oliver K. Austin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 26, 1978, Ser. No. 900,407

Int. Cl.[3] C01B *31/14*

U.S. Cl. 23—314 24 Claims

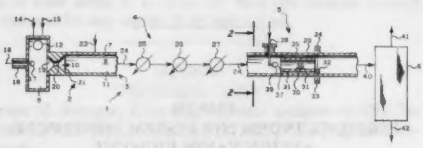
1. An apparatus for cooling gases, said apparatus including:

first means for producing hot gases;

a first tubular member defining a first quench compartment in flow communication with and downstream of said first means, said first tubular member having a first discharge;

vaporization means for substantially completely vaporizing a quench liquid introduced into said first tubular member, said vaporization means comprising a second tubular member mounted within and extending generally along the longitudinal axis of, a portion of said first quench compartment, with a substantial portion of the exterior surface of said second tubular member being spaced from the traversely adjacent interior surface of said first tubular member, thereby forming a first flow path between said first and second tubular members, said second tubular member having a second flow path extending therethrough, having first and second open ends with said first open end being upstream of said second open end and being effective for substantially complete vaporization in said second flow path of a quench liquid introduced thereinto; and

first inlet means opening into said first quench compartment and being operable for introducing said quench liquid into



said second flow path for flow along said second flow path in a direction generally from said first open end to said second open end.

15. A method which comprises:

producing a hot gaseous stream;

separating said hot gaseous stream into a first portion and a second portion;

flowing said first portion along a first flow path in a first quench zone and flowing said second portion along a second flow path in the first quench zone with said first flow path partially surrounding the second flow path;

contacting substantially only said second portion with quench liquid as said first and second portions flow along said first and second flow paths to thereby further cool said second portion and to substantially completely vaporize said quench liquid; and

admixing said first and second portions after flow along said first and second flow paths.

4,358,290

BURNING PROPERTIES OF FLUID COKE

Nai Y. Chen, Titusville, N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 27, 1980, Ser. No. 163,599

Int. Cl.³ C10L *9/00, 5/00*

U.S. Cl. 44—1 F **4 Claims**

1. A particulate solid fuel having an ignition temperature that maintains ignition of said fuel when utilized in the furnace combustion chamber of a steam generating boiler burning pulverized solid fuels, said particulate solid fuel being a flowing solid and being produced by blending fluid petroleum coke with heavy oil in an amount varying from about 2 to 20 percent by weight of coke, said coke having a volatility content of less than 8 percent by weight and said heavy oil being a petroleum liquid boiling above about 900° F. selected from the group consisting of atmospheric or vacuum distillation residues, FCC main column bottoms, and the like, and having an API gravity of less than about 15, said heavy oil and said coke being at a heavy oil:coke ratio having an upper limit that is defined by the amount of heavy oil which results in a sticky mass and a lower limit that is defined by the quantity of volatiles necessary to support combustion and the quantity of volatiles necessary to avoid "flame-out" in said furnace combustion chamber.

4. In a hydrocarbon oil fluid coking process wherein an oil is pyrolytically converted in a coking zone by contact with fluidized particulate coke maintained at a coking temperature to gaseous and liquid conversion products and carbonaceous residue which is deposited on said solids, a portion of which solids and carbonaceous residue is at least periodically recovered as a fluid coke product, the improvement which converts said fluid coke product to a flowing solid fuel having a combustibility at least equal to the combustibility of delayed coke when said solid fuel is utilized in a steam generating boiler burning pulverized solid fuels, said improvement comprising the step of blending said fluid coke product with a protion of said hydrocarbon oil in an amount ranging from about 2 to 20 percent by weight of the coke product, said coke having a volatility content of less than 8 percent by weight and said heavy oil being a petroleum liquid boiling above about 900° F. selected from the group consisting of atmospheric or vacuum distillation residues, FCC main column bottoms, and the like, and having an API gravity of less than about 15.

4,358,291

SOLID STATE RENEWABLE ENERGY SUPPLY

Jerome J. Cuomo, Lincolndale, and Jerry M. Woodall, Bedford Hills, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,650

Int. Cl.³ C10L *3/00;* **C01B** *1/07;* **C25C** *3/06*

U.S. Cl. 44—3 B **5 Claims**

1. The process of providing energy in the form of heat and hydrogen comprising in combination the steps of:

reacting in an oxidation type of reaction a source of a passivating oxide forming solid state material and an oxygen supplying reagent composed of at least oxygen and hydrogen in the presence of an agent inhibiting said passivating oxide, producing thereby hydrogen gas, heat, and an oxide of said solid state material as reaction products;

recovering and recycling said passivating oxide inhibiting agent; and

recovering and recycling in a chemical reduction type of reaction said oxide of said solid state material reaction product.

4,358,292

STABILIZED HYBRID FUEL SLURRIES

Orlando A. Battista, Fort Worth, Tex.

Filed Aug. 17, 1979, Ser. No. 67,387

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **14 Claims**

1. The method of preparing a stabilized liquid fuel slurry comprising from about 30% to 70% liquid fuel oil, from about 25% to 65% solid fuel particles with sizes up to about ¼ inch, from about 1% to 10% water and from about 0.5% to 10% insoluble suspending agent having submicron colloidal particle sizes and selected from the group consisting of carbon black, graphite and microcrystals isolated from linear organic polymers which comprises forming a suspension of the suspending agent in water, adding the suspension to the liquid fuel oil, subjecting the mixture to a high speed shearing operation, adding the solid fuel particles to the mixture while continuing the mixing operation for at least about 8 minutes to about 30 minutes.

4,358,293

COAL-AQUEOUS MIXTURES

Seymour Mark, Northampton, Pa., assignor to Gulf & Western Manufacturing Co.

Filed Jan. 29, 1981, Ser. No. 230,062

Int. Cl.³ C10L *1/32, 1/18*

U.S. Cl. 44—51 **57 Claims**

1. A coal-aqueous mixture consisting essentially of: particulate coal as a dispersed solid material; water as a carrier medium; and a polyalkyleneoxide nonionic surfactant having a

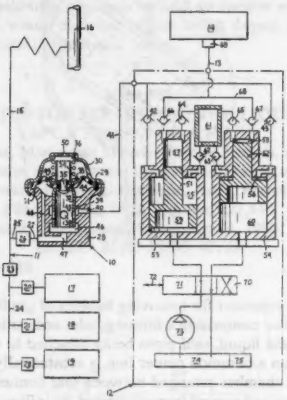
hydrophobic portion and a hydrophilic portion, said hydrophilic portion comprising at least about 100 units of ethylene oxide, said polyalkyleneoxide nonionic surfactant being present in said mixture in an amount sufficient to disperse said particulate coal in said water carrier.

4,358,294

INLET THROTTLING VALVE OF GAS FUEL COMPRESSOR

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Filed Dec. 8, 1980, Ser. No. 214,241
Int. Cl.³ F17D *3/00*
U.S. Cl. 48—191 **9 Claims**



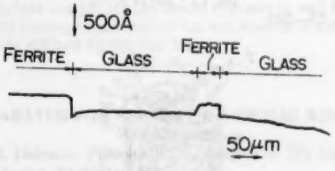
6. A gas fuel supply system comprising means supplying gas fuel, appliance means connected to said means supplying gas fuel and operable above a certain predetermined minimum gas fuel pressure level, a gas fuel compressing means connected to said means supplying gas fuel, and control means operable to vary the mass of said gas fuel being compressed per unit time by said gas fuel compressing means to maintain pressure in said means supplying gas fuel above said predetermined minimum pressure level.

4,358,295

POLISHING METHOD

Yoshiharu Namba, Hirakata, and Taketoshi Yonezawa, Minoo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 27, 1980, Ser. No. 134,635
Int. Cl.³ C09K *3/14*
U.S. Cl. 51—309 **1 Claim**



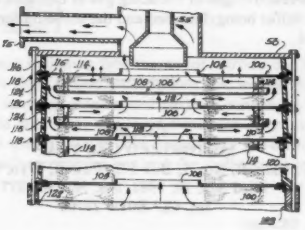
1. A polishing method for mirror-finishing the surface of a work with a surface roughness of less than 0.05 μm comprising the steps of: preparing a treating liquid which contains, as a viscosity increasing agent, from 10 wt.% to 30 wt.% of glycerol and from 1 wt.% to 4 wt.% of magnesium oxide particles having a grain size in the order of 0.1 μm; and causing a relative movement between said surface of said work and a lap so as to produce therebetween a state of dynamic-pressure fluid bearing sufficient to float said work in said treating liquid, thereby separating the surface of said work from said lap during the polishing process, while said magnesium oxide particles collide with said surface of said work in association with said treating liquid in a flow state to cause elastic fracture, so that said surface of said work is mirror-finished with no work-affected layer by said magnesium oxide particles.

4,358,296

DEOXYGENATING APPARATUS AND METHOD

Luigi Notardonato, Park Ridge; Casimir Pulawski, Chicago, and David M. Kemp, Jr., Naperville, all of Ill., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 2, 1981, Ser. No. 239,209
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—38 **1 Claim**



1. A method of removing oxygen-containing air from water comprising: providing a plurality of deoxygenating units in vertical array and in which each unit comprises at least one horizontal foraminous member such that a number of members are vertically spaced to provide horizontal paths therebetween, passing water downwardly through said foraminous members at a rate sufficient to cause droplets of water to flow downwardly from member-to-member and at the same time leave a thin coating of water on at least some of said member, introducing stripping gas into the column in counterflow to said water so that some of the gas passes generally upwardly in a serpentine path that includes passage upwardly through an open central region of some of said members, passage horizontally through the spaces between said members, wherein said gas flows horizontally across the downwardly falling droplets, and passage upwardly around the peripheries of others of said members, the stripping gas thereby contacting said droplets to provide an exchange of stripping gas for the oxygen-containing air previously dissolved in the water, said coating of water being sufficiently thin such that the rest of the gas bubbles vertically through the coatings on at least some of said members to enhance further said exchange of stripping gas for oxygen-containing air at the same time said exchange is taking place due to gas flow along said serpentine path.

4,358,297

REMOVAL OF SULFUR FROM PROCESS STREAMS

Paul E. Eberly, Jr., Baton Rouge, La., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 109,144, Jan. 2, 1980, abandoned. This application Jan. 2, 1981, Ser. No. 222,054
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—62 **9 Claims**

1. A process for the removal of sulfur from a moisture-bearing, sulfur containing hydrocarbon process stream which comprises

contacting said stream with a particulate mass of zeolite sufficiently ion-exchanged with cadmium to provide pore size openings of about 5 Å, and greater, to adsorb sulfur thereon, and after completion of the sulfur sorption cycle,

contacting said ion-exchanged zeolite with an essentially non-reactive gas or reducing gas at elevated temperature, the sulfur being desorbed and the sorbent thereby regenerated.

6. A process for the removal of sulfur from a moisture-bearing, sulfur containing process stream wherein a series of on-stream reactors are provided with beds of a sulfur sensitive platinum-containing catalyst, a naphtha feed with hydrogen is cocurrently passed sequentially through said series of reactors, and a vaporous effluent rich in hydrogen is taken from the last reactor of the series, hydrogen is separated from the products and recycled, the improvement which comprises

contacting said stream with a particulate mass of zeolite sufficiently ion-exchanged with cadmium to provide pore size openings of about 5 Å, and greater, to adsorb sulfur thereon, and after completion of the sulfur sorption cycle,

contacting said ion-exchanged zeolite with an essentially non-reactive gas or reducing gas at elevated temperature, the sulfur being desorbed and the sorbent thereby regenerated.

4,358,298

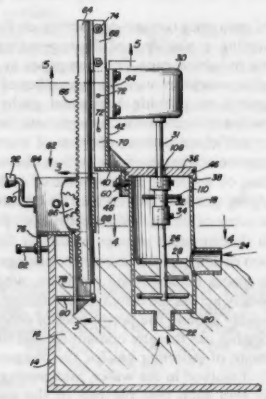
MOTORIZED GAS TRAP

Elmer G. Ratcliff, Rte. 1, Box 175, Powell, Wyo. 82435

Filed Sep. 10, 1981, Ser. No. 300,817

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—185 **7 Claims**



1. A gas trap for removing, collecting and discharging gases from a drilling fluid whereby a portion of the gases may be analyzed, said gas trap comprising a generally vertically disposed can having a bottom inlet and a side outlet for drilling fluid, a shaft depending into the can and drivingly connected to a motor disposed above the can, a plurality of radially extending fingers on the shaft in engagement with drilling fluid to agitate the drilling fluid and facilitate separation of gases therefrom, said can including a top member closing the upper end thereof with the shaft extending centrally therethrough, a standpipe communicated with the interior of the can through the top member to subject the interior of the can to a vacuum and discharge gases collected in the can to an analyzer, means connecting the can to the top member in a secure but releasable manner to enable the can to be rotated about a vertical axis in order to orient the side outlet in desired angular relationship about the center of the can and means supporting the top member and the can, standpipe, motor and shaft in desired vertical relationship to the surface of a drilling fluid.

4,358,299

GAS SEPARATOR FOR LIQUID-CONDUCTING SYSTEMS

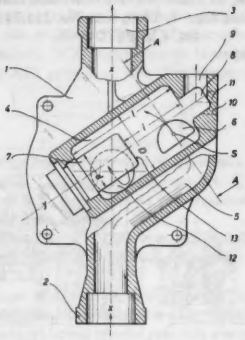
Niels D. Jensen, and Kurt F. Nielsen, both of Bjerringbro, Denmark, assignors to Grundfos A/S, Bjerringbro, Denmark

Filed Jun. 11, 1981, Ser. No. 272,532

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022420

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—204 **12 Claims**



1. A gas separator for removing bubbles of gas from a liquid, said separator comprising a housing, inlet and outlet connector pipes for said liquid, said pipes being attached to said housing and lying on a common center line, a substantially cylindrical separation chamber arranged between said connector pipes in said housing and spaced from said pipes, an inflow opening and flow guidance means for guiding gas-containing liquid tangentially into said chamber and setting the liquid in rotation, whereby the axis of the chamber forms the center of rotation of a centrifugal field, gas bubbles being forced to the center of rotation and conducted away to the exterior, through an outlet in said separation chamber and an outflow opening in said chamber for removing degassed liquid, wherein a first plane placed through the common center line of said connector pipes, and a second plane placed through the chamber axis perpendicular to said first plane produce a line of intersection which forms with said center line an angle (α) in the order of magnitude of $0° < \alpha < 90°$.

4,358,300

WELDING FUME AND SPARK TRAP

William J. Schlapman, Winneconne, and James L. Wirsbinski, Marshfield, both of Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 5, 1981, Ser. No. 270,994

Int. Cl.³ B01D *47/02*

U.S. Cl. 55—245 **4 Claims**

1. An improved fume and spark trap for an air filtering system adapted to be operatively connected between a source

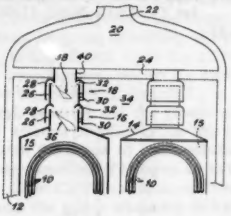
of air suction and a source of air-suspended fumes, particles and sparks comprising: closed cannister means defining a water chamber adapted to contain cooling water, and outlet adapted for connecting said cannister means with said source of air suction, passage means comprising an inlet plenum comprising a pair of inlet openings each adapted for connection with said source of air-suspended fumes, particles and sparks, an inlet baffle disposed between said inlet openings, said inlet plenum extending inwardly of said cannister means toward said water chamber and defining a discharge opening through which said fumes and sparks move, baffle means disposed within said cannister means between said discharge opening and said outlet for enhancing contact of the air-suspended fumes, particles and sparks with said water contained within said water chamber, whereby air-suspended fumes, particles and sparks drawn in either of said inlet openings by said air suction are directed toward said water chamber before being drawn out of the cannister means through said outlet.

4,358,301

APPARATUS FOR SEPARATING THE LIQUID AND VAPOR PHASES OF A FLUID

Jean E. Chaix, Manosque; Maurice Fajeau, Pertuis, and Jean F. Ouzeau, Saint Sebastien sur Loire, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 22, 1980, Ser. No. 227,540
Claims priority, application France, Jan. 4, 1980, 80 00125
Int. Cl.³ B01D *50/00, 45/12*
U.S. Cl. 55—318 **18 Claims**



1. An apparatus for the separation of the liquid and vapor phases of a fluid incorporating an open ended cylinder having an axis and blades in the cylinder, wherein each blade is in the form of a curvilinear triangular surface having a first side contiguous with the cylinder and defining a helix whose axis coincides with the cylinder axis, an apex opposite to said first side, arranged substantially at the axis of the cylinder and assembled in sealed manner at the corresponding apices of the other blades, two other sides of the triangular surface defining a leading edge substantially perpendicular to the cylinder axis and a trailing edge inclined with respect to said axis, and two other apices opposite respectively to said leading edge and to said trailing edge, said trailing edge being curved and defining with a straight line joining the apices opposite to said first side and to said leading edge a surface curved inwards in a direction of the helix defined by the first side.

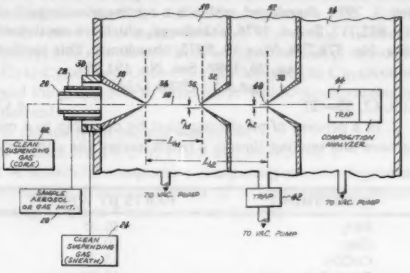
4,358,302

APPARATUS FOR SEPARATION OF GAS BORNE PARTICLES

Barton E. Dahneke, Palmyra, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,613
Int. Cl.³ B01D *57/00*
U.S. Cl. 55—392 **13 Claims**

1. Apparatus for separation of gas borne particles of selected dimensions and mass having a nozzle which delivers a particle suspension into a vacuum environment forming a continuum source particle beam, the improvement which comprises means for delivering into said nozzle separate flows of gas respectively containing said particles and free of said particles with said particle free flow being along the axis of said nozzle and said particle containing flow being spaced outward from the center of said axis, and separator means with at least one collimator having an aperture aligned with said nozzle, said



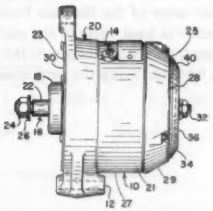
delivery means including first means for introducing into said nozzle a core flow of said particle-free gas, second means for introducing into said nozzle said particle containing gas surrounding said core flow and third means for introducing into said nozzle a sheath flow of said particle free gas between said flow of particle containing gas and the wall of said nozzle.

4,358,303

ROTATING DEBRIS SCREEN FOR ALTERNATOR

Donald G. Rakow, Lombard, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 876,610, Feb. 10, 1978, abandoned, which is a continuation of Ser. No. 716,485, Aug. 20, 1976, abandoned. This application Aug. 31, 1979, Ser. No. 71,594
Int. Cl.³ B01D *53/24*
U.S. Cl. 55—408 **2 Claims**



1. In a filter arrangement for a high speed alternator of a vehicle, said alternator having an enclosing housing, said housing being formed by a substantially annular body connecting first planer wall having cooling air outlet and second planer wall having cooling air inlet, and having a driven shaft passing through said first planar wall, said shaft having a power receiving end outside said housing, the improvement including, in combination:

said shaft extending through said housing, exiting said second wall, and having a filter mounting end outside said housing;

said cooling air inlet being located in said second wall; and

a non-magnetic self-cleaning filter screen secured on and for rotation with said filter mounting end in the magnetic field of said alternator and in close proximity to and encompassing said air inlet,

said screen being an apertured disc having a circumferential lip angled toward said second wall.

4,358,304

METHOD FOR PREPARING MOLTEN GLASS

Magnus L. Froberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 960,881, Nov. 15, 1978, abandoned, which is a continuation of Ser. No. 849,839, Nov. 9, 1977, abandoned, which is a continuation-in-part of Ser. No. 764,922, Feb. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 692,717, Jun. 4, 1976, abandoned, which is a continuation of Ser. No. 578,776, May 19, 1975, abandoned. This application Sep. 26, 1980, Ser. No. 191,202

Int. Cl.[3] C03B *5/16*

U.S. Cl. 65—27 4 Claims

1. In a process of producing glass by charging to a melting furnace and melting therein a batch having the composition:

INGREDIENT	PARTS BY WEIGHT
SiO_2	20–35
Clay	20–35
$CaCO_3$	15–25
Burnt Colemanite	10–25
Inorganic fluoride	0.2–5
$NaNO_3$	0–1
$CaSO_4.2H_2O$	0–1

with the total of the alkali metal and/or alkaline earth metal salts that are ionizable in water at room temperature ($NaNO_3$ and $CaSO_4.2H_2O$) being at least 0.10% by weight, the improvements of pelletizing the batch materials using water, charging the wet pellets containing free water onto the upper surface of a vertical pellet treatment bed having a lower discharge end communicating with the furnace, substantially simultaneously (1) withdrawing pellets through said lower discharge end for charging to the furnace, (2) moving the remaining pellets by gravity downwardly through the bed, (3) passing the hot furnace effluent gas upwardly through the bed to heat the pellets therein, and (4) drying the wet pellets on the upper surface of the bed by the spent effluent gas which has already passed through the bed, the sequential performance of steps (3) and (4) on the effluent gas being effective (a) to remove at least some of the boron from the effluent gases, (b) to remove at least some of the fluorine from the effluent gases, and (c) to remove at least some of the particulate matter from the effluent gases, and the presence of the wet particles at the surface of the bed enhancing the performance of steps (3) and (4).

4,358,305

METHOD OF AND APPARATUS FOR ANALYZING ATMOSPHERE OF A COMBUSTION CHAMBER

George E. Sleighter, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 23, 1981, Ser. No. 304,538

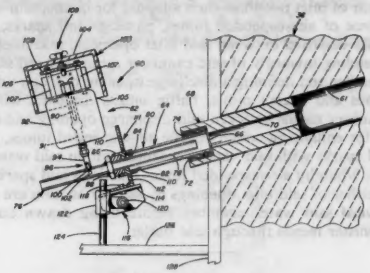
Int. Cl.[3] C03B *5/16, 5/24*

U.S. Cl. 65—29 10 Claims

1. A method of monitoring atmosphere of a combustion chamber having a regenerator at each of opposed chamber walls with each regenerator communicating with chamber interior by at least one port, wherein pressure differential between chamber atmosphere and ambient atmosphere is positive, comprising the steps of:

providing at least one access hole through each of the opposed chamber walls to move under the biasing force of the positive pressure differential a portion of the chamber atmosphere defined as a sample through each of the at least one access holes;

determining oxygen content in the sample; and



controlling oxygen content in the chamber atmosphere in response to said determining step.

4,358,306

METHOD FOR MOLDING A FUSED QUARTZ GLASS BLOCK

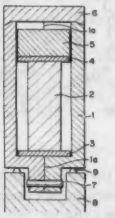
Haruo Okamoto, and Motoyuki Yamada, both of Joetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,588

Claims priority, application Japan, Oct. 6, 1980, 55-139673

Int. Cl.[3] C03B *29/02, 11/00*

U.S. Cl. 65—32 8 Claims



1. A method for shaping a block of a fused quartz glass from a starting quartz glass block which comprises the steps of

(a) placing the starting block in a mold made of graphite,

(b) causing plastic deformation of the starting block to fill the mold by compression under an atmosphere of helium at a temperature of 1700° C. or higher,

(c) rapidly cooling the thus molded block in the graphite mold down to a temperature in the range from 1300° C. to 1100° C.,

(d) slowly cooling the molded block at a temperature of 1300° to 1100° C. in the graphite mold down to a temperature of 900° C. or below, and

(e) taking the molded block out of the graphite mold.

4,358,307

HERBICIDAL QUINOXALINE CARBOXYLIC ACID DERIVATIVES

Alexander Serban, Doncaster; Keith G. Watson, Box Hill North, and Graeme J. Farquharson, Reservoir, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

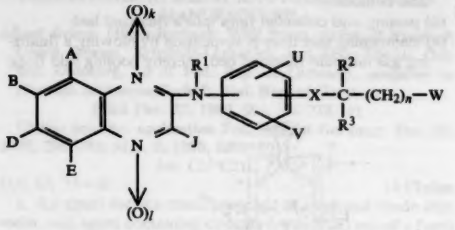
Filed Sep. 8, 1980, Ser. No. 184,973

Claims priority, application Australia, Oct. 2, 1979, PE0702

Int. Cl.[3] A01N *43/60*; C07D *241/44, 241/52*

U.S. Cl. 71—92 13 Claims

1. A compound of formula I



I

or acid addition salt thereof wherein;

A, B, D, E, J, U and V are independently chosen from the group consisting of hydrogen, halogen, nitro, cyano, thiocyano, amino, C_1 to C_6 alkylamino, di(C_1 to C_6 alkyl)amino, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_2 to C_6 alkenyl, C_3 to C_7 cycloalkyl, C_1 to C_6 alkoxy, C_1 to C_6 haloalkoxy, C_1 to C_6 alkylthio, C_1 to C_6 alkylsulfinyl, C_1 to C_6 alkylsulfonyl, C_1 to C_6 haloalkylsulfinyl, C_1 to C_6 haloalkylsulfonyl, sulfo, C_1 to C_6 alkoxysulfonyl, sulfamoyl, N-(C_1 to C_6 alkyl) sulfamoyl, N,N-di(C_1 to C_6 alkyl)sulfamoyl, carboxy, (C_1 to C_6 alkoxy)carbonyl, carbamoyl, N-(C_1 to C_6 alkyl)carbamoyl, N,N-di(C_1 to C_6 alkyl)carbamoyl, phenyl, phenoxy, phenylthio, and the groups substituted phenyl, substituted phenoxy and substituted phenylthio wherein in each group the phenyl ring is substituted with from one to three substituents chosen from the group consisting of halogen, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy, nitro and cyano;

R^1 is chosen from the group consisting of hydrogen, C_1 to C_{10} alkyl, C_2 to C_{10} alkenyl, C_2 to C_{10} alkynyl, C_2 to C_{10} alkoxyalkyl, cyanomethyl, (C_1 to C_6 alkoxy)-carbonylmethyl, C_1 to C_{10} haloalkyl, formyl, C_2 to C_{10} alkanoyl, phenyl, benzyl, benzoyl, and the groups phenyl, benzyl and benzoyl wherein in each group the phenyl ring is substituted with from one to three substituents chosen from the group consisting of halogen, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy, nitro and cyano;

R^2 is chosen from the group consisting of hydrogen, C_1 to C_6 alkyl, C_2 to C_6 alkenyl, C_2 to C_6 alkoxyalkyl, C_1 to C_6 haloalkyl, acetyl, propionyl, and C_2 to C_6 alkoxycarbonyl;

R^3 is chosen from the group consisting of hydrogen, C_1 to C_6 alkyl, C_2 to C_6 aikenyl, C_2 to C_6 alkoxyalkyl and C_1 to C_6 haloalkyl, or R^2 and R^3 together may form a methylene, ethylidene, propylidene or isopropylidene group;

W is chosen from the group consisting of cyano, thiocarbamoyl,

and CH_2Z

wherein:

G is chosen from the group consisting of hydroxy, mercapto, C_1 to C_{10} alkoxy, C_1 to C_{10} haloalkoxy, C_2 to C_{10} alkenyloxy, C_2 to C_{10} alkynyloxy, C_1 to C_{10} alkylthio, C_2 to C_{10} alkenylthio, C_2 to C_{10} alkynylthio, C_3 to C_7 cycloalkoxy, C_3 to C_7 cycloalkoxy substituted with one or two C_1 to C_4 alkyl groups, phenoxy, phenylthio, benzyloxy, benzylthio, the group C_1 to C_6 alkoxy substituted with a substituent chosen from the group consisting of C_1 to C_6 alkoxy, amino, cyano, N-(C_1 to C_6 alkyl)amino and N,N-di(C_1 to C_6 alkyl)amino, the groups phenoxy, phenylthio, benzyloxy and benzylthio wherein in each group the phenyl ring is substituted with from one to three substituents chosen from the group consisting of halogen, nitro, cyano, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl and C_1 to C_6 alkoxy, the group OM wherein M is an alkali metal ion, alkaline earth metal ion or an ammonium ion $N^{\oplus}R^7R^8R^9$ wherein R^7, R^8 and R^9 are independently chosen from the group consisting of hydrogen, C_1 to C_6 alkyl, C_1 to C_6 hydroxyalkyl, phenyl and benzyl, the group $—NHSO_2R^4$ wherein R^4 is chosen from C_1 to C_{10} alkyl and C_1 to C_{10} haloalkyl, and the group $—NR^5R^6$ wherein R^5 and R^6 are independently chosen from the group consisting of hydrogen, C_1 to C_6 alkyl, C_1 to C_6 hydroxyalkyl, C_1 to C_6 haloalkyl, phenyl, and benzyl, and the group $—O—N=R^{10}$ wherein R^{10} is a C_1 to C_{10} alkylidene group; and Z is chosen from halogen, hydroxy, mercapto, C_1 to C_{10} alkoxy, C_1 to C_{10} haloalkoxy, C_1 to C_{10} alkylthio and the group NR^5R^6 wherein R^5 and R^6 are hereinbefore defined;

X is chosen from oxygen and sulfur;

k is chosen from 0 to 1; l is 0; and n is 0, 1 or 2.

11. A herbicidal composition comprising as active ingredient a herbicidally effective amount of a compound as defined according to claim **1** and a carrier therefor.

4,358,308

HERBICIDAL 4-PERFLUOROACETYL-, 4-PERFLUOROMETHYLTHIO-, 4-PERFLUOROMETHYLSULFINYL-, AND 4-PERFLUOROMETHYLSULFONYL-4'-NITRODIPHENYL ETHERS

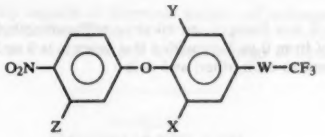
Colin Swithenbank, Perkasie, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 19, 1981, Ser. No. 312,455

Int. Cl.[3] **C07C** *149/40, 149/34, 147/07;* **A01N** *41/10*

U.S. Cl. 71—98 **30 Claims**

1. A compound of the formula:



wherein

W is carbonyl, thio, sulfinyl, or sulfonyl

X is a hydrogen atom, a halogen atom, a trifluoromethyl group, a (C_1–C_4) alkyl group, or a cyano group,

Y is a hydrogen atom, a halogen atom, or a trifluoromethyl group, and

Z is a hydroxy group, an alkoxy group having up to 6 carbon atoms, an alkyl group having up to 4 carbon atoms, a halogen atom, an amino group, an alkylthio group having up to 4 carbon atoms, a cyano group, a carboxy group, a carbalkoxy group having up to 4 carbon atoms in the alkoxy moiety, a carboxyalkyl group having up to 4 carbon atoms, a carbalkoxyalkyl group having up to 6 carbon atoms, an alkanoyloxy group having up to 4 carbon atoms, or a carbamoyloxy group of the formula $—OCONH_2$, —OCONHR, or $—OCONR_2$, wherein R represents and alkyl group having up to 6 carbon atoms and when Z is carboxy an agronomically acceptable salt thereof.

26. A herbicidal composition comprising a herbicidally-effective amount of a compound according to claim **1** and an agronomically-acceptable carrier.

4,358,309

UREA DERIVATIVES AND HIGHLY SELECTIVE HERBICIDAL COMPOSITIONS CONTAINING THE SAME

Tetsuo Takematsu, Utsunomiya; Masaki Takeuchi, Ohmiya; Masanori Okada, Niiza; Hiroshi Sugiyama, and Yasushi Murakami, both of Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

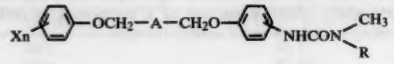
Filed Mar. 26, 1981, Ser. No. 247,711

Claims priority, application Japan, Apr. 17, 1980, 55-49575; May 16, 1980, 55-64038

Int. Cl.³ C07C *69/76, 127/19;* **A01N** *9/20*

U.S. Cl. 71—120 **19 Claims**

1. A compound represented by the formula

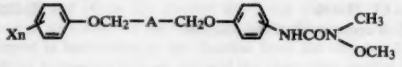


wherein X is a halogen, an alkyl or trifluoromethyl, n is an integer of from 0 to 3, provided that when n is 2 or 3, X may be different to each other; A is

or —C≡C—, wherein

is in trans form; and R is methyl or methoxy.

18. A highly selective herbicidal composition comprising a carrier and a herbicidally effective amount of a compound represented by the formula



wherein X is a halogen, an alkyl or trifluoromethyl, n is an integer of from 0 to 3, provided that when n is 2 or 3, X may be different to each other; and A is

or —C≡C—, wherein

is in trans form.

4,358,310

DRY COLLECTION OF METALLIZED FINES

Charles W. Sanzenbacher, and David C. Meissner, both of Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Filed Feb. 18, 1981, Ser. No. 235,487

Int. Cl.³ C22B *7/02*

U.S. Cl. 75—25 **10 Claims**

1. A method for cooling and collecting solid fines from the cooling zone of a direct reduction shaft furnace comprising:

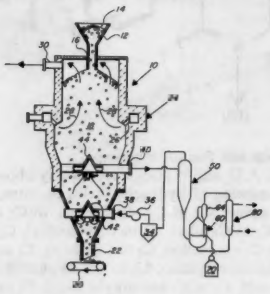
(a) removing spent cooling gas and entrained fines from the cooling zone of a shaft furnace;

(b) passing said fines-laden gas into a cyclone dust collector;

(c) separating said fines from said spent cooling gas in said dust collector;

(d) passing said collected fines into a fluidized bed;

(e) maintaining said fines in suspension by blowing a fluidizing gas into said fluidized bed, thereby cooling said fines;



(f) removing cooled fines from said cooler;

(g) removing said fluidizing gas from said cooler; and

(h) passing the removed gas through an indirect cooler to cool said gas and returning the cooled gas to said fluidized bed cooler.

4,358,311

METHOD AND APPARATUS FOR THE SMELTING OF MATERIAL SUCH AS ORE CONCENTRATES

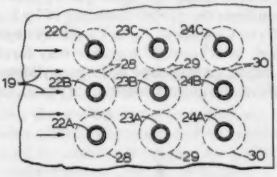
Horst Weigel, and Gerhard Melcher, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 152,592, May 23, 1980. This application Aug. 4, 1981, Ser. No. 290,077

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922189

Int. Cl.³ C22B *15/00;* **F27B** *15/00*

U.S. Cl. 75—26 **10 Claims**



1. A method for smelting an ore concentrate or the like wherein said concentrate is first melted in an oxidizing atmosphere and the smelt is aftertreated with reducing gases to recover the metal values wherein the improvement comprises:

positioning a plurality of rows of lances in a smelting reactor in the direction of molten metal flow,

the spacing between rows of lances being substantially greater than the spacing between individual lances in each row,

blowing a reducing gas through each lance with sufficiently high kinetic energy to cause an area of toroidal bath movement to occur where the gases from each lance impinge against the moving smelt, the spacing between rows of lances being sufficiently large so that a relatively quiescent zone exists between the areas of toroidal bath movement between each of said rows, and

separately withdrawing a slag phase and a metal-containing phase from said smelting reactor.

4,358,312

DESULFURIZING AGENT AND PROCESS FOR ITS MANUFACTURE

Albert Braun, Hürth-Burbach; Willi Portz, Erftstadt-Kierdorf; Georg Strauss, Erftstadt-Lechenich, and Hans-Martin Delhey, Duisburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,731

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952761; Mar. 8, 1980, 3008950

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—58 14 Claims

1. An agent for the desulfurization of steel and crude iron melts, said agent containing crystals crystallized out of a fused mass comprising CaO and CaC_2 and comprising 40–80% by weight of CaO and 1–6% by weight of chemically combined water, which water has hydrated said CaO to form $Ca(OH)_2$.

4,358,313

PROCESS FOR REFINING MOLTEN PIG IRON AND STEEL

Masataka Yoshii; Mitsugu Anabuki; Tatsuro Kuwabara; Yasuo Obana, and Takuo Kono, all of Oita, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 16, 1981, Ser. No. 244,116

Claims priority, application Japan, Mar. 17, 1980, 55-33546

Int. Cl.³ C21C *1/00*

U.S. Cl. 75—60 8 Claims

1. A process for refining molten pig iron and steel, which comprises successively treating each of at least four charges with oxygen-blowing in a converter and stopping the oxygen-blowing at a blown-off carbon [C] content ranging from 0.09 to 0.15%, tapping the resultant molten steel from the converter, and subjecting the molten steel tapped from the converter to a secondary refinement to obtain a desired carbon content.

4,358,314

METAL REFINING PROCESS

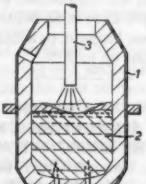
Adrain S. Normanton, Middlesbrough, England, assignor to British Steel Corporation, London, England

Filed Aug. 17, 1981, Ser. No. 293,508

Claims priority, application United Kingdom, Sep. 3, 1980, 8028485

Int. Cl.³ C21C *5/32, 5/34*

U.S. Cl. 75—60 18 Claims



1. In a process for refining steel comprising blowing a refining gas on to the upper surface of a melt contained in a refining vessel by means of an overhead lance, and additionally injecting a stirring or processing gas directly into the melt by means of one or more tuyeres projecting into the melt below the surface thereof, the improvement in which at the commencement of the refining cycle the refining gas lance is located at a predetermined height above the melt, and the gas flow rate to the below melt tuyere or tuyeres is set at a predetermined level, and further characterised by the steps of reducing the height of the lance and the gas flow rate to the one or more tuyeres in one or more stages during the course of the refining cycle, and increasing the height of the lance and the gas flow rate to the tuyere or tuyeres towards the end of the refining cycle.

4,358,315

MANGANESE STEELS

Robert D. Jones, Cardiff, Wales, and Vijay Jerath, Marton Middlesborough, England, assignors to University College Cardiff, Cardiff, England

Filed Jul. 9, 1980, Ser. No. 167,438

Claims priority, application United Kingdom, Jul. 10, 1979, 7923973

Int. Cl.³ C22C *38/04*

U.S. Cl. 75—123 N 4 Claims

1. A manganese steel consisting essentially of apart from impurities, 11.8–13.5% by weight manganese, 2.0–6.0% by weight molybdenum, 0.002–0.2% by weight carbon, and optionally one or more of silicon (up to 0.4% by weight), sulphur (up to 0.02% by weight) and phosphorus (up to 0.03% by weight) and balance iron.

4,358,316

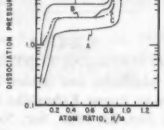
ALLOYS FOR HYDROGEN STORAGE

James Liu, Ramsey, N.J., and Charles E. Lundin, deceased, late of Evergreen, Colo. (by Bonnie R. Lundin, legal representative), assignors to University Patents, Inc., Norwalk, Conn.

Filed Dec. 29, 1980, Ser. No. 220,596

Int. Cl.³ C22C *30/00;* C01B *6/02*

U.S. Cl. 75—123 N 7 Claims



1. An alloy capable of reversible sorption of hydrogen having the formula $Fe_{1-x}Mn_xTi_{1-y}V_y$, wherein x is within the range of from 0 to 0.2 and y is within the range of from 0.005 to 0.08.

4,358,317

MATERIALS FOR A BIT

Yoshihiko Abe, Tokyo, Japan, assignor to Mitsubishi Steel Mfg. Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 214,420

Claims priority, application Japan, May 12, 1980, 55-61706

Int. Cl.³ C22C *38/22, 38/24*

U.S. Cl. 75—126 C 1 Claim

1. A material for a bit for drilling igneous rock having a bit leg, cutters rotatably mounted in said bit leg, bearing means interposed between said cutters and said bit leg, and ring seals arranged in said cutters near bearings, whereby said cutter is

peripherally provided with cutting teeth either formed integrally therewith or separately by embedding therein cutting teeth made of hard metal such as tungalloy, said material to be used for said bit leg, said cutter, said bearing, said ring seal, etc. being steel consisting essentially of 0.10 to 0.20 wt.% C, up to 0.5 wt.% of Si, up to 1.0 wt.% Mn, 3.0 to 5.0 wt.% Cr, 0.8 to 2.0 wt.% Mo, 0.10 to 0.70 wt.% V, the balance being Fe, and adapted to be used after its surface layer is hardened by a carburizing process.

4,358,318

NICKEL-BASED ALLOY

Howard F. Merrick, Suffern; LeRoy R. Curwick, Warwick, and Raymond C. Benn, Suffern, all of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed May 13, 1980, Ser. No. 149,316

Int. Cl.³ C22C *19/05*

U.S. Cl. 420—449 **11 Claims**

1. An alloy metallurgically stable with respect to the formation of sigma phase when placed under stress at temperatures up to about 1100° C. and having resistance to the detrimental effects of oxidation and corrosion at high temperatures consisting essentially, in weight percent, up to about 0.2% carbon, about 11.5% to about 12.2% chromium, about 4% to about 8% cobalt, about 4.5% to about 5.2% molybdenum plus tungsten with the ratio of molybdenum to tungsten being about 1.5, about 8.8% to about 9.7% aluminum plus titanium with the ratio of aluminum to titanium being about 0.95, up to about 0.4% boron, up to about 0.1% zirconium with the balance being essentially nickel, said alloy being characterized by a life-to-rupture at 760° C. under a stress of 648 MPa of about 100 hours and by a life-to-rupture at 980° C. under a stress of 200 MPa of about 25 hours and being characterized by being devoid of sigma phase after exposure to stress at temperatures up to about 1100° C.

4,358,319

METHOD FOR MANUFACTURING COMMUTATOR

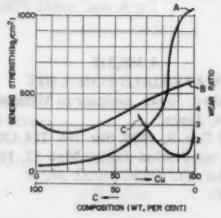
Makoto Yoshida, Machida, and Satoru Baba, Yamato, both of Japan, assignors to Aupac Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1980, Ser. No. 161,672

Claims priority, application Japan, Jul. 2, 1979, 54-83609; Feb. 21, 1980, 55-19720

Int. Cl.³ B22F *5/00*

U.S. Cl. 75—200 **8 Claims**



1. In a method for manufacturing a commutator, wherein a shaping material comprising an electrically conductive metal powder is placed in a shaping mold, compression-molded into an annular body, and sintered, re-compression being done on the sintered body, depending on necessity, to increase its mechanical strength and material hardness, the improvement comprising forming said annular body to have oppositely disposed spaced, generally radially extending, side surfaces with radially extending grooves in one of said side surfaces, and a peripheral surface; covering said grooved radial side, at least a portion of the peripheral surface and the center hollow portion and filling said grooves with an electrically insulative synthetic resin bearing material, the other side being exposed to a substantial degree; and cutting off the exposed surface side of said insulative material-coated annular body in parallel with the plane of said surface to a depth reaching said filled grooves in the opposite surface of said body thereby to define a plurality of commutator segments.

4,358,320

REINFORCED COMPOSITES

Alfred Marzocchi; Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 3, 1980, Ser. No. 183,692

The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.

Int. Cl.³ C08L *95/00*

U.S. Cl. 106—282 **3 Claims**

1. A bituminous composite comprising (1) a bitumen as a continuous phase and (2) a siliceous filler component comprising (a) glass fibers and (b) a coating on the glass fibers, said coating comprising a chemically modified bitumen capable of reaction with the glass fibers to chemically bond the chemically modified bitumen to the glass fibers.

4,358,321

LEAD-FREE CERAMIC PINK-COLORING MATERIAL CONSISTING OF CHROMIUM-TIN-CALCIUM-SILICON-ALKALI METAL OXIDE PLUS BISMUTH AND/OR PHOSPHORUS OXIDE AND PROCESS

Robert Fischer, Obertshausen, and Heinz-Dieter DeAhna, Egelsbach, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 10, 1981, Ser. No. 272,084

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3023941

Int. Cl.³ C09C *1/34, 3/06*

U.S. Cl. 106—302 **9 Claims**

1. In a lead-free ceramic pink-coloring material consisting of calcium oxide, tin oxide, silica, chromium oxide, and alkali metal oxide, the improvement of an addition from about 0.1 to 10% bismuth, phosphorus, or a mixture of bismuth and phosphorus, the bismuth being in the form of an oxide or an oxide forming compound and the phosphorus being in the form of an oxide or alkali metal phosphate.

7. A process of preparing the pink-coloring material of claim 1 comprising calcining at a temperature of 1000° to 1400° C. a mixture of calcium, tin, chromium, silicon, and alkali metal compounds in the presence of an oxide or oxide-forming compound of phosphorus, bismuth, or a mixture of phosphorus and bismuth in an amount up to 20%.

4,358,322

PROCESS FOR SEPARATING A KETOSE FROM AN ALDOSE BY SELECTIVE ADSORPTION

Richard W. Neuzil, Downers Grove, and James W. Priegnitz, Elgin, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 690,768, May 27, 1976, Pat. No. 4,226,977. This application Sep. 13, 1979, Ser. No. 74,856

Int. Cl.³ C13K *1/00, 3/00, 11/00*

U.S. Cl. 127—46.2 **3 Claims**

1. A process for continuously separating, in liquid phase, fructose from a liquid feed mixture of sugars containing fructose and glucose, fructose being selectively adsorbed by contact with solid adsorbent particles of crystalline aluminosilicate or zeolite, utilizing a simulated countercurrent flow system, wherein liquid streams are allowed to flow through three serially closed loop interconnected zones including a desorption zone, a purification zone and a adsorption zone, each zone being divided into a plurality of serially interconnected beds, each bed being packed with a mass of said solid adsorbent particles, comprising the steps of introducing said liquid feed mixture into the first bed of said adsorption zone, introducing

water as a desorbent into the first bed of said desorption zone, withdrawing a portion of a desorption effluent comprising the extract and the desorbent from the bed of said desorption zone for obtaining a product of fructose, withdrawing a portion of a raffinate effluent comprising less adsorbed sugars and the desorbent from a point such that a zone remains between the raffinate outlet stream and the desorbent inlet stream and immediately upstream with respect to the fluid flow to the desorption zone, and all of the points of introducing and withdrawing said liquid streams into and from said beds are simultaneously shifted one bed at a time at predetermined intervals of time, in a downstream direction in the same aliquot portion of the total cycle, and circulating said liquid streams flowing in said three zones without any interruption of flow between said desorption zone and said purification zone.

4,358,323

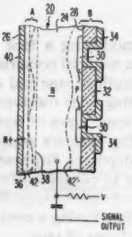
LOW COST REDUCED BLOOMING DEVICE AND METHOD FOR MAKING THE SAME

Lloyd F. Wallace, Coatesville, Pa., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 143,026, Apr. 23, 1980, Pat. No. 4,329,702. This application Jan. 19, 1982, Ser. No. 340,775

Int. Cl.³ H01L *27/14, 21/263*

U.S. Cl. 148—1.5 **3 Claims**



1. A method for controlling blooming in an image sensing device comprising the steps of:

preparing a silicon wafer of a first type conductivity, said wafer having first and second major surfaces;

forming an insulating layer on the second major surface of said wafer;

etching a plurality of apertures through said insulating layer;

forming a plurality of regions of a second conductivity type through said apertures;

forming an enhanced conductivity region along said first major surface extending into said wafer; and

implanting protons into the first surface of said wafer, said protons having an energy of about 80–110 keV so as to provide a dosage of approximately $4.5–5.6\times10^{15}$ protons per square centimeter to establish a recombination layer spaced from said first surface.

4,358,324

METHOD OF IMPARTING A FINE GRAIN STRUCTURE TO ALUMINUM ALLOYS HAVING PRECIPITATING CONSTITUENTS

Murray W. Mahoney, Camarillo; C. Howard Hamilton, and Neil E. Paton, both of Thousand Oaks, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 20, 1981, Ser. No. 236,364

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—12.7 A **5 Claims**

1. An improvement in a method of imparting a fine grain structure to an aluminum alloy having a precipitating constituent, said method having steps of:

providing an aluminum alloy having a precipitating constituent;

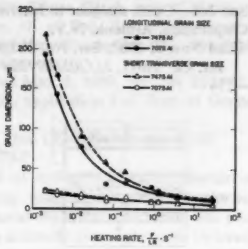
dissolving at least some of said precipitating constituent in said alloy by heating said alloy to a solid solution temperature;

cooling said alloy to a temperature below said solid solution temperature;

overaging said alloy to form precipitates;

plastically straining said alloy; and

recrystallizing said alloy;



said improvement being characterized in that said step of recrystallizing said alloy comprises:

heating said alloy at a rate of at least 0.02 F.·s^{-1} to a temperature above its minimum recrystallization temperature, whereby said precipitates form nuclei for the recrystallization and controlled growth of a fine grain structure.

4,358,325

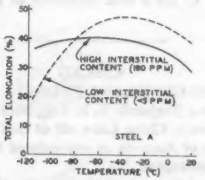
METHOD OF TREATING LOW CARBON STEEL FOR IMPROVED FORMABILITY

Robin Stevenson, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 71,651, Aug. 31, 1979, abandoned. This application Mar. 18, 1981, Ser. No. 244,931

Int. Cl.³ C21D *9/48*

U.S. Cl. 148—125 **2 Claims**



1. A method of forming steel sheet to provide deeper drawability before fracture, wherein said method the steel has a ferrite matrix and a carbon content less than about 0.5 weight percent, the method comprising

heating said steel sheet at a temperature between about 250° C. and 500° C. for a time greater than about 20 minutes such that the interstitial carbon content of the ferrite matrix is equilibrated in the range of from about 5 to 50 parts by weight interstitial carbon per million parts iron;

immediately quenching said steel to retain about 5 to 50 parts per million parts iron of interstitial carbon in the ferrite matrix; and

drawing said quenched steel at a temperature below about 0° C.;

the combination of controlling the interstitial carbon content of the steel in said range and forming the steel at said low temperature serving to substantially increase the total elongation of the steel before fracture as measured by limiting dome height and compared to the total elongation before fracture of like steel sheet formed at about 20° C. as received from the mill, the method having particular

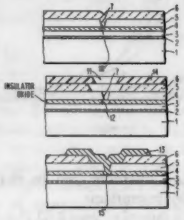
application to making articles which require substantial elongation of such steel without fracture.

4,358,326

EPITAXIALLY EXTENDED POLYCRYSTALLINE STRUCTURES UTILIZING A PREDEPOSIT OF AMORPHOUS SILICON WITH SUBSEQUENT ANNEALING

Ven Y. Doo, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,039
Int. Cl.³ H01L *21/205, 21/324*
U.S. Cl. 148—174 **43 Claims**



1. A method of forming a polycrystalline layer on an insulator coating of a silicon integrated circuit

depositing from a silicon forming gaseous phase a discrete amorphous silicon layer in a thickness not exceeding 1000 angstroms on said insulator coating at a temperature in the range of about 550° to 600° C.;

heating the resultant structure at a temperature of about 800° C. to convert said amorphous silicon layer to an equiaxial polycrystalline seed layer, and

epitaxially extending the crystal grains of said polycrystalline seed layer by heating thereof in a silicon forming ambient at a temperature in the range of about 650° to about 700° C. for a time sufficient to grow the thickness desired.

4,358,327

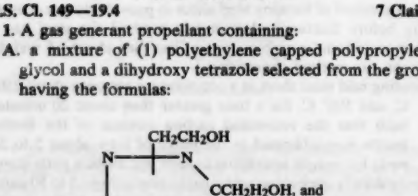
GAS GENERANT PROPELLANTS

Russell Reed, Jr.; Benjamin Y. S. Lee, both of Ridgecrest, and Ronald A. Henry, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 14, 1980, Ser. No. 196,893
Int. Cl.³ C06B *15/10*
U.S. Cl. 149—19.4 **7 Claims**

1. A gas generant propellant containing:

A. a mixture of (1) polyethylene capped polypropylene glycol and a dihydroxy tetrazole selected from the group having the formulas:



which has been cured by means of a diisocyanate;

B. a plasticizer; and

C. a deflagrating agent selected from the group consisting of:

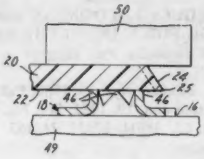
dihydrazinium 3,6-bis(5-tetrazolyl)-1,2-dihydrotetrazine, dinitrosopentamethylenetetramine, the reaction product of glyoxal and hydrazine and the ammonium salt of 5-nitramino tetrazole.

4,358,328

TAPE-CUTTING BLADE ATTACHING METHOD

Walter C. Pearson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 30,823, Apr. 17, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,519
Int. Cl.³ B29C *27/08*; B26D *1/02*
U.S. Cl. 156—73.1 **2 Claims**



1. A method for modifying a tape dispenser including a frame of thermoplastic material comprising means for defining a path for a supply length of tape and a portion transverse of the path having a cutting edge transverse of the path adapted to transversely sever some types of tape along the path when the tape and the cutting edge are pressed against each other, which modification adapts the dispenser so that the dispenser can sever other harder to cut types of tape, said method comprising the steps of:

providing a metal plate having a cutting edge adapted to cut the harder to cut types of tape;

piercing the plate at a number of locations to provide at each location a plurality of generally triangular plate portions projecting generally normally from a first surface of the plate and an opening through the plate and between the plate portions, which opening is larger in cross-sectional area adjacent the bases of the plate portions than adjacent the distal ends of the plate portions;

placing the distal ends of the plate portions against the frame portion along the path with the surface of the plate adjacent the frame overlying the cutting edge on the frame and with the cutting edge on the plate transverse of the path in a position to transversely sever tape along the path;

heating the frame portion around the plate portions to locally soften the thermoplastic resin of the frame portion;

pressing the plate portions into the softened thermoplastic resin so that the thermoplastic resin flows into and generally fills the opening; and

allowing the heated thermoplastic resin to cool.

4,358,329

SAFETY LAMINATE AND PROCESS FOR PRODUCTION THEREOF

Eisuke Masuda, Jyoyo, Japan, assignor to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 25, 1980, Ser. No. 181,224
Int. Cl.³ B32B *31/00, 17/06*
U.S. Cl. 156—106 **10 Claims**

1. A process for producing a safety laminate comprising at least two plates bonded to each other through an adhesive interlayer, which comprises

applying an adhesiveness-imparting agent which is liquid at ambient temperature and is substantially non-adhesive to said plates to at least one of (a) the surface of each of said

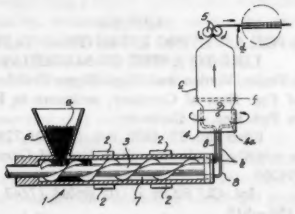
plates and (b) each surface to be bonded to said surface of said plates of a sheet-like adhesive material which is substantially non-adhesive, but which is latently adhesive, to said plates, said adhesiveness-imparting agent being a plasticizer capable of developing the latent adhesiveness of said sheet-like adhesive material to render it adhesive and wherein said sheet-like adhesive material is composed of a material selected from the group consisting of acrylic resins, polyvinylbutyral resins and polyester resins; and

sandwiching said sheet-like adhesive material as an interlayer between two of said plates at ambient temperature to bond said plates through the interlayer of said sheet-like adhesive material when the adhesiveness is developed by the adhesiveness-imparting agent.

4,358,330
METHOD OF MANUFACTURE OF LAYERED FILM INCLUDING LAYERS HAVING CROSSED DIRECTIONS OF MOLECULAR ORIENTATION

Adolfo S. Aronovici, Moreno 1942 - Ramos Mejia - PCIA, Beunos Aires, Argentina

Continuation-in-part of Ser. No. 13,020, Feb. 21, 1979, abandoned. This application Sep. 3, 1980, Ser. No. 183,763
Claims priority, application Argentina, Oct. 17, 1978, 274112
Int. Cl.³ B29D *7/24*
U.S. Cl. 156—244.14 **2 Claims**



1. In a method for manufacturing a layered film from thermoplastic material in solid form, such as pellets, powder or amphorous particles, wherein said film is defined by a plurality of superposed layers, the material comprising each layer having molecular chains oriented in a certain direction, the orientation directions of pairs of adjacent layers crossing each other, comprising the steps of heating the solid thermoplastic material to its softening point to obtain a viscous mass of the thermoplastic material; conveying the viscous mass while mechanically working the same through at least one flow stream into the annular material shaping die opening of a rotating matrix from which it discharges in the form of a tubular segment whereupon the viscous mass solidifies, and passing the tubular segment as it discharges from the matrix between at least one pair of rotating stretching cylinders to form the layered film; simultaneously injecting gas into the space defined within the tubular segment and between the matrix and stretching cylinders whereby the tubular segment obtains a desired width; adjusting the rotational speed of the cylinders and the rate of discharge of the viscous mass defining the tubular segment from the opening of the matrix with respect to each other whereby the tubular segment obtains the desired thickness; the improvement comprising:

relocating the frost line band wherein the transition of the material from its molten to a solidified state occurs to a region substantially immediately above the annular die opening through the steps of rotating the matrix at a rate in the range of between about 1 and 20 rpm, and selectively adjusting the stretching speed defined by the stretching cylinders, and the amount of gas injected into the tubular segment, and wherein said relocation of the frost line band is accomplished with the tubular segment not being cooled by separate cooling equipment during the method, whereby the molecular chains are oriented substantially immediately after the thermoplastic material is discharged from the die opening in a molten state and substantially immediately prior to the material solidifying.

4,358,331
METHOD OF EMBEDDING SEMICONDUCTOR COMPONENTS IN PLASTICS

Eckehard Schmidt; Dieter Rüsch, both of Wedel, and Manfred Tauber, Holm, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

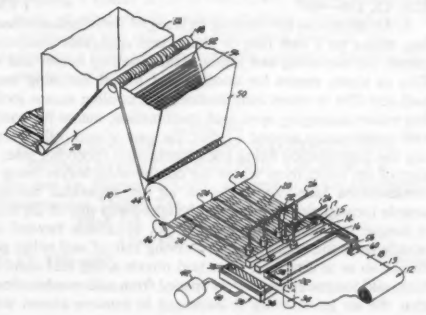
Filed Mar. 5, 1980, Ser. No. 127,422
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908485
Int. Cl.³ B29C *25/00, 27/00*
U.S. Cl. 156—275.5 **5 Claims**

4. A method of embedding semiconductor solar cells in plastic comprising: inserting the semiconductor solar cells into the plastic material thereafter hardening the plastic material surrounding the semiconductor solar cells by irradiation with a high energy beam; and metering the energy of the high energy beam during said step of hardening so as to provide a varying degree of hardening of the plastic material as a function of the material thickness and a desired set degree of hardening of the portion of said plastic material adjacent the solar cells.

4,358,332
APPARATUS FOR COATING PAPER WITH A PLASTIC PATTERN

John Rodish, Ft. Wright, Ky., assignor to Polynovus Industries, Inc., Ft. Wright, Ky.

Division of Ser. No. 88,862, Oct. 29, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,930
Int. Cl.³ B29D *7/02*
U.S. Cl. 156—356 **9 Claims**



1. An apparatus for applying to a surface of a relatively thin sheet material in the form of a continuous web a reinforcing pattern of plastic stripes, said apparatus comprising means for linearly translating said web, nozzle means for applying to a surface of said web stripes of extruded plastic, means for oscillating said nozzle means in a direction transverse to the direction of translation of said web for applying said stripes in a mesh-like pattern, suction means disposed below said web for drawing said plastic through said web, means for applying streams of cooling air to said surface coated with said stripes, a catch pan, means for detecting a break in said web, and means for placing said catch pan under said nozzle means upon detection of said break.

4,358,333

APPARATUS FOR PRINTING, DISPENSING AND APPLYING PRESSURE-SENSITIVE LABELS ADHERING TO A CARRIER TAPE

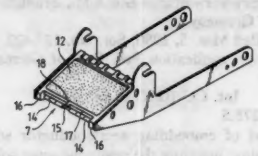
Günter Holland-Letz, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,371

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 3008642; Feb. 5, 1981, 3104035

Int. Cl.³ B65C *11/02*

U.S. Cl. 156—384 5 Claims



1. Apparatus for printing, dispensing and applying pressure-sensitive labels adhering to a carrier tape comprising a feed means which draws the carrier tape stepwise round a peel edge which is formed by rollers mounted on a shaft and at which the pressure-sensitive label detaches from the carrier tape and moves into a dispensing position, wherein the shaft carrying the rollers consists of tungsten or hardened steel and is supported between its ends.

4,358,334

FORMING AN INTEGRAL CLOSURE FOR A THERMOPLASTIC CONTAINER

Thomas A. Sutrina, Rockford, Ill., and R. Douglas Behr, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 149,861, May 14, 1980, Pat. No. 4,295,919, which is a division of Ser. No. 969,911, Dec. 15, 1978, Pat. No. 4,263,079. This application Apr. 20, 1981, Ser. No. 255,601

Int. Cl.³ B32B *31/22*

U.S. Cl. 156—497 1 Claim

1. An apparatus for forming an integral thermoplastic fastening means on a cast film or sheet, said apparatus comprising means for extruding and joining said fastening means and said film or sheet, means for cooling said joined fastening means and said film or sheet combination, said cooling means including water impinging upon said combination, means for passing said combination around a roller, the part of said roller receiving the combination being the combination receiving side, the part of the roller from which the combination leaves being the combination take-away side, an air jet apparatus having a nozzle located closely adjacent the take-away side of the roller, a tongue extending from said air jet apparatus beyond said nozzle over the combination receiving side of said roller positioned so as to direct air from said nozzle along said combination, said tongue being closely spaced from said combination so that the air jet velocity is increased to remove excess water from the surface of said combination.

4,358,335

FABRIC REPAIRING ASSEMBLY

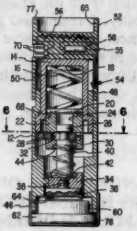
Gerhard Reinert, Bayside, N.Y., assignor to The Singer Company, Stamford, Conn.

Filed Jul. 20, 1981, Ser. No. 284,877

Int. Cl.³ B32B *35/00*

U.S. Cl. 156—514 10 Claims

1. A fabric repairing assembly including a support surface, a housing, a cutter in one end of the housing, a manually operable plunger extending from the other end of the housing and movable therein for causing the cutter to move against a damaged portion of fabric supported on said surface and cut out a part of the fabric including the damaged area, and for moving the cutter against an undamaged portion of the fabric supported on said surface to cut out a patch for the hole made in the damaged portion, and a heating and pressing unit including a sleeve formed slidably to accommodate the other end of said



housing wherein said housing can be moved relatively to said sleeve to cause the plunger to apply a force against the heating and pressing unit and the heating and pressing unit to press against the aforesaid patch when located in the said hole in an overlying relationship with an adhesive pad resting on the a support surface.

4,358,336

DEVICE FOR APPLYING TAPES (TEAR-TAPES) OR THE LIKE TO A WEB OF MATERIAL

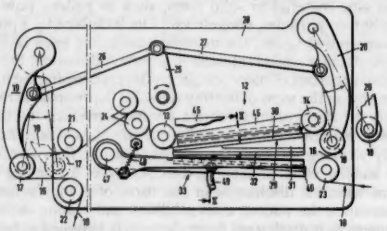
Heinz H. Focke, Verden, and Hans-Jürgen Bretthauer, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Jan. 30, 1980, Ser. No. 116,724

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904204

Int. Cl.³ B32B *31/10;* B65H *17/42*

U.S. Cl. 156—518 8 Claims



1. A device for applying tear tapes or the like to a wrapping material web, including conveying devices both for a tape web and for the wrapping material web and including a cutting device, comprising a fixed cutter and a movable cutter for severing the tear tapes traversely from the tape web, the movable cutter being provided with vacuum operated retaining means for holding, transporting and transfering the cut-off tape to the wrapping material web, said device further including direction-change devices for said wrapping material web including diverting rollers (17,18), located upstream and downstream of a transfer portion (12) of said wrapping material web, said wrapping material web passing around portions of said rollers, the rollers being attached to pivotally mounted rockers, said rockers being synchronously reciprocatingly driven at a speed and in a direction to by themselves stop movement of said web in at least said transfer portion (12) thereof at an instant of transfer of the cut-off tapes (11) to said wrapping material web, while portions of said wrapping material web

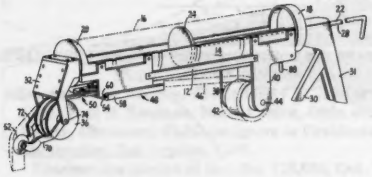
located upstream and downstream of said transfer portion continue to be transported.

4,358,337

TAPE APPLICATOR

Eugene R. Johnson, Burlingame, and Jack P. Haran, Mt. View, both of Calif., assignors to Bliss & Laughlin Industries, Inc., Oak Brook, Ill.

Filed Nov. 23, 1981, Ser. No. 324,038
Int. Cl.³ B32B 31/00; B44C 7/00
U.S. Cl. 156—526 12 Claims



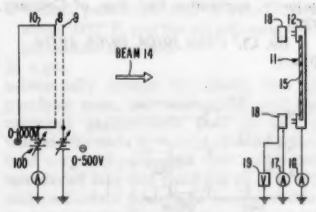
1. A tape applicator and mastic dispenser comprising:
means for dispensing mastic material from a container through a discharge outlet;
means for supporting a roll of tape on said dispensing means;
tape advancing means including means for periodically activating same and feeding tape from a thus supported roll of tape beneath said discharge outlet;
a pressure roll for applying a mastic coated segment of tape to a wall joint; and
means connecting said pressure roll to said tape advancing means for positioning said roll in retracted or tape supporting positions by actuation of said tape advancing means, whereby said pressure roll is retracted as tape is advanced beneath said discharge outlet and positioned in front of said dispensing means for supporting and applying mastic coated tape to a wall joint when said tape advancing means is not activated.

4,358,338

END POINT DETECTION METHOD FOR PHYSICAL ETCHING PROCESS

Daniel F. Downey, Magnolia, and George T. Lecouras, Lynn, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 16, 1980, Ser. No. 150,533
Int. Cl.³ H01L 21/306; C23F 1/00
U.S. Cl. 156—627 7 Claims



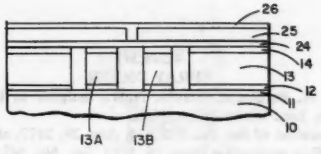
1. A method for determining the end point of a physical etching process step, comprising the steps of:
measuring the current through a semiconductor layer having at least one overlying layer thereon being etched;
measuring the current through a mask positioned in the vicinity of said layer;
subtracting said current through said mask from said current measured through said semiconductor layer to produce a layer-dependent current component; and
detecting changes in said layer-dependent current component as the physical etching step progresses with end point being indicated by detection of a change greater than a preselected amount.

4,358,339

METHOD OF FABRICATION OF BUBBLE DOMAIN DEVICE STRUCTURES

Thomas R. Oeffinger, Huntington Beach; Robert F. Bailey, Rossmoor; Tsutomu Kobayashi, Placentia, and John P. Reekstin, Orange, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 928,487, Jul. 27, 1978, abandoned. This application Jun. 6, 1980, Ser. No. 157,143
Int. Cl.³ B44C 1/22; C03C 15/00, 25/06; C23F 1/02
U.S. Cl. 156—643 29 Claims



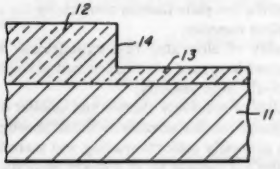
1. A method of fabricating a microelectronic circuit device from a garnet substrate capable of maintaining magnetic bubble domains in the presence of a bias magnetic field comprising the steps of:
forming a barrier layer composed of a dielectric glass on said substrate;
forming a layer of electrically and thermally conductive material over said barrier layer and substantially the entire substrate;
etching narrow grooves into said layer of electrically and thermally conductive material to said barrier layer to form a patterned arrangement;
depositing a spacer layer of electrically nonconductive material of substantially uniform thickness over said layer of electrically and thermally conductive material; and
depositing a layer of a magnetically operative material over said spacer layer.

4,358,340

SUBMICRON PATTERNING WITHOUT USING SUBMICRON LITHOGRAPHIC TECHNIQUE

Horng-Sen Fu, Sunnyvale, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 14, 1980, Ser. No. 168,875
Int. Cl.³ H01L 21/283
U.S. Cl. 156—643 10 Claims



1. A method for the fabrication of an insulated gate semiconductor device comprising the steps of:
(a) forming an adherent insulation layer on a semiconductor substrate;

(b) selectively thinning a portion of said insulation layer to provide a substantially vertical step at the location where the resulting thin portion adjoins the original thick portion;

(c) depositing a conductor film of micron or submicron thickness, on and near said vertical steps;

(d) thinning at least a portion of said conductor film until the only portion thereof remaining in the vicinity of said step is a narrow section directly adjacent said step, on the thin portion of said insulation layer;

(e) using the remaining conductor as a mask, selectively removing the insulation not covered by the conductor, whereby an insulated gate is formed;

(f) and then completing said device.

4,358,341

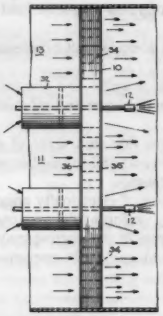
SPRAY DRYER

Dwight H. Bergquist, Omaha, Nebr., assignor to Henningsen Foods, Inc., White Plains, N.Y.

Continuation of Ser. No. 828,634, Aug. 29, 1977, abandoned. This application Mar. 26, 1981, Ser. No. 247,924

Int. Cl.³ B01D *1/14*

U.S. Cl. 159—4 B **1 Claim**



1. A horizontally disposed air supply manifold and a drying chamber having a flat top and side and bottom walls for directing air thru said drying chamber with a flow generally parallel to said walls throughout said chamber and having an initial flow pattern of a plurality of generally parallel streams of high velocity and streams of relatively low velocity and of thereafter having a single blended generally parallel flowing air stream having uniform velocity across the stream and having an air distribution plate therein comprising the combination of:

a flat plate member;

a plurality of elongated first cylindrically tubular nozzles mounted in spaced positions in said plate for passing air at relatively high velocity;

a plurality of relatively shorter and smaller diameter second elongated tubular nozzles mounted throughout said plate with generally uniform spacing and surrounding said first nozzles for passing air at a lower velocity;

said first and second nozzles having their axes positioned perpendicularly to said flat plate;

fluid atomizers mounted beyond the air outlets of said first nozzles, and

means at the air exit ends of said first nozzles for causing a flare of the air flowing from said second nozzles.

4,358,342

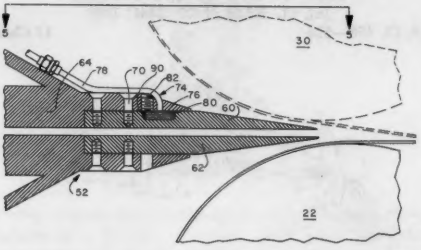
PAPERMAKING HEADBOX HAVING RIGID LIPS AND ACTVATING MEANS

David A. Nuttall, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 19, 1981, Ser. No. 226,185

Int. Cl.³ D21F *1/02, 1/06*

U.S. Cl. 162—259 **7 Claims**



1. In a headbox of the type utilized with a twin wire or crescent forming papermaking machine, said headbox having upper and lower substantially rigid slice lips affixed to upper and lower headbox support members extending across the full width of said papermaking machine and said upper and lower lips also extending substantially into a forming zone formed between converging wires or fabrics, the improvement comprising:

(a) actuating means in the form of bellows located within said upper or lower slice lip;

(b) fluid supply means for supplying a fluid to said actuating means under pressure of at least 1,000 pounds per square inch; and

(c) a full width cross machine channel machined into the upper or lower slice lip, said bellows being located in said channel, and said channel being adjacent to said upper or said lower support means, said channel providing a uniform flexure point for deflection of said upper or lower slice lip.

4,358,343

METHOD FOR QUENCHING COKE

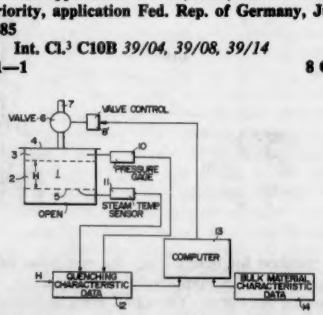
Franz Goedde, Stolberg; Rudolf Redlich, Kohlscheid, and Johann Riecker, Duesseldorf, all of Fed. Rep. of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 169,038, Jul. 15, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,271

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929385

Int. Cl.³ C10B *39/04, 39/08, 39/14*

U.S. Cl. 201—1 **8 Claims**



1. A method for quenching a batch of coke in a quenching chamber which is closed at the top by a cover and which has

an open grating forming a chamber bottom on which the batch of coke rests, comprising the following steps: ascertaining a first set of data which represent at least one characteristic of the coke to be quenched, ascertaining a second set of data which represent at least one quenching characteristic, and indirectly controlling the vapor pressure in the space above the coke below the cover as a function of said first and second sets of data by controlling the quantity of quenching liquid supplied per unit of time to the top surface of the coke in the quenching chamber below the closed cover so that optimal quenching and heat recovery conditions prevail for the entire duration of the quenching operation, whereby said vapor pressure ranges from about 0.41 bar at the beginning of the quenching to about 0.13 bar at the end of the quenching.

4,358,344

PROCESS FOR THE PRODUCTION AND RECOVERY OF FUEL VALUES FROM COAL

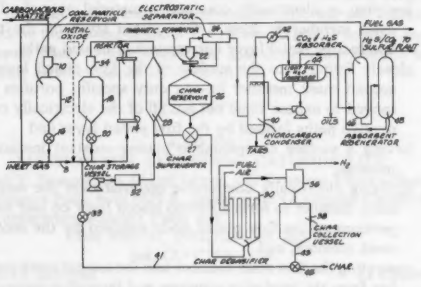
Allan Sass, Los Angeles, Calif.; Harry E. McCarthy, Golden, Colo.; Paul R. Kaufman, North Canton, Ohio, and Clement S. Finney, Claremont, Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 728,856, Oct. 1, 1976, abandoned, which is a continuation of Ser. No. 534,108, Dec. 18, 1974, abandoned, which is a continuation of Ser. No. 345,090, Mar. 26, 1973, abandoned, which is a continuation-in-part of Ser. No. 57,582, Jul. 23, 1970, Pat. No. 3,736,233. This application Oct. 3, 1977, Ser. No. 838,841

The portion of the term of this patent subsequent to May 29, 1990, has been disclaimed.

Int. Cl.³ C10B *49/16*

U.S. Cl. 201—4 **73 Claims**



1. A process for the pyrolysis of coal to produce volatile fuel values and char therefrom comprising:

a. continuously introducing into a pyrolysis zone

i. particulate coal having a particle size less than about 14 mesh,

ii. heated particulate char at a temperature of between about 1000° F. and the ash softening temperature of said particulate char, and

iii. a gas,

substantially without introducing free oxygen into said pyrolysis zone, and maintaining said coal and char in turbulent gas-entrained flow in said pyrolysis zone wherein the parts by weight of said particulate char to the total weight of particulate char and particulate coal being introduced into said pyrolysis zone is such as to permit said particulate coal to be heated within said pyrolysis zone to a temperature of between about 900° F. and about 1400° F. to produce a product stream containing a first gaseous product and a first solid product, said first gaseous product comprising said gas introduced into said pyrolysis zone and volatile fuel values produced from said particulate coal, and said first solid product comprising said particulate char introduced into said pyrolysis zone and a char produced from said coal;

b. removing said product stream from said pyrolysis zone;

c. substantially separating said first solid product from said first gaseous product; and

d. heating at least a portion of said first solid product, before permitting substantial exposure of same to free oxygen, to a temperature of between about 1200° F. to about 1800° F. to evolve a second gaseous product which is a hydrogen-rich gas, and to produce a second solid product.

4,358,345

ARRANGEMENT FOR FEEDING GLOWING COKE

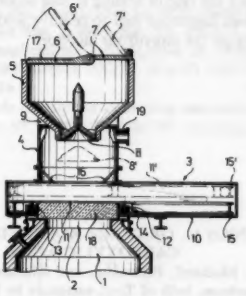
Johannes Lorrek, Essen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,680

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003374

Int. Cl.³ C10B *39/02*

U.S. Cl. 202—228 **11 Claims**



1. An arrangement for feeding a glowing coke, comprising means forming a cooling shaft into which coke and cooling gas are to be introduced; a coke transporting container adapted to be placed atop said shaft and having a closable bottom opening for operatively communicating said coke transporting container with a coke inlet opening of said cooling shaft, said coke transporting container being provided with at least two cover plates which are pivotable upwardly for receiving coke into said container; and a closing device arranged in said cooling shaft below said coke inlet opening and including a housing sealed from the ambient atmosphere, and a closing plate which is raisable and lowerable and also displaceable in a substantially horizontal direction in said housing.

4,358,346

CONTROL OF ALCOHOL DISTILLATION

Francis G. Shinskey, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed May 6, 1981, Ser. No. 260,954

Int. Cl.³ B01D *3/42*; C07C *29/82*

U.S. Cl. 203—1 **10 Claims**

1. A method for controlling the production of anhydrous alcohol comprising the steps of:

distilling in a first column means a mixture of material containing alcohol to form an azeotrope of water and alcohol;

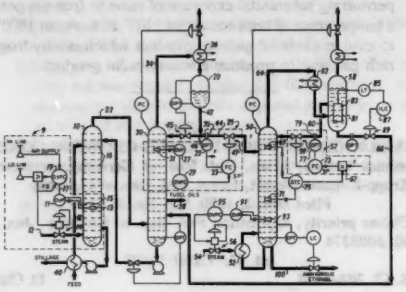
introducing said azeotrope as a feed to a second column means;

adding a predetermined amount of a hydrocarbon solvent to said second column to permit separation of said azeotrope;

detecting within said second column a change in the concentration of said hydrocarbon solvent;

automatically regulating in response to said detected change the amount of said hydrocarbon solvent within said second column to maintain the proper proportion of solvent

to water thereby compensating for variances in the composition of said feed; and



regulating the rate of boiling in said second column to separate said azeotrope and to remove said hydrocarbon solvent from the anhydrous alcohol.

4,358,347

REMOVAL OF TRACE ALDEHYDES FROM CARBOXYLIC ACIDS

Bonnie K. Mettetal, Richwood, and Richard P. Kolonko, Jr., Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 26, 1982, Ser. No. 342,964

Int. Cl.³ B01D *3/34;* C07C *51/44*

U.S. Cl. 203—38 **5 Claims**

1. In a process for removing carbonyl impurities from an unsaturated acid by adding a compound to said acid which will react with said impurities, the improvement of employing a 1,2-glycol as said added compound, reacting by heating and subsequently distilling the unsaturated acid to obtain an acid having a lower content of carbonyl impurities.

4,358,348

PROCESS FOR THE PREPARATION OF PURE HEXAFLUOROPROPYLENE OXIDE

Reinhard A. Sulzbach, Burghausen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 25, 1982, Ser. No. 352,347

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1981, 3107967

Int. Cl.³ B01D *3/40;* C07D *301/32*

U.S. Cl. 203—67 **1 Claim**

1. A process for the removal of hexafluoropropylene oxide from gas mixtures composed of hexafluoropropylene oxide and hexafluoropropylene by extractive distillation in the presence of an extractive medium, which comprises bringing the gas mixture into contact with methylene chloride as the extractive medium, whereupon hexafluoropropylene oxide is evolved in the form of gas and hexafluoropropylene is absorbed and is then liberated by heating the methylene chloride to its boiling point.

4,358,349

METHOD OF FORMING ELECTRICAL WIRING PATH ON INSULATIVE SUBSTRATE

Takagi Masami; Nakayama Shunichi, and Honda Kazuyoshi, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

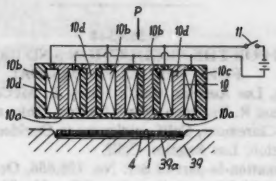
PCT No. PCT/JP80/00042, § 371 Date Jan. 26, 1981, § 102(e) Date Jan. 26, 1981, PCT Pub. No. WO80/02632, PCT Pub. Date Nov. 27, 1980

PCT Filed Mar. 13, 1980, Ser. No. 233,596

Claims priority, application Japan, May 24, 1979, 54/64786

Int. Cl.³ C25D *5/00, 17/18*

U.S. Cl. 204—15 **9 Claims**



1. A method of forming electrically conductive paths on an insulative substrate comprising the steps of

forming on the insulative substrate a plated metal foundation layer which comprises a thin conductive metal layer,

closely fitting onto the thin conductive metal layer a first mask member having portions at selected locations removed forming paths and having a surface comprising a plating-resistant insulative material,

applying an electrically conductive material over the first mask member to form a first plated layer on the thin conductive metal layer corresponding to said paths,

closely fitting onto the surface of the first plated layer a second mask member having only specific portions removed to expose some but not all of the electrically conductive paths formed by the first plated layer and

having a surface comprising a plating-resistant insulative material,

applying electrically conductive material over the second mask member to form a second plated layer on said some portions of the first plated layer exposed by the second mask member, and

separating the first mask member and the second mask member from the insulative substrate and thereafter removing exposed portions of the thin conductive metal layer on the surface of the insulative substrate.

4,358,350

STRONGLY ACID GOLD ALLOY BATH

Peter Kunz, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 270,211

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021665

Int. Cl.³ C25D *3/62*

U.S. Cl. 204—43 G **7 Claims**

1. A strongly acid bath suitable for the electrolytic deposition of a gold alloy coating having a low content of a platinum group metal comprising an aqueous solution containing 1–10 g/l of gold in the form of tetracyanoaurate (III), 0.1–5 g/l of a platinum group metal in the form of a water soluble salt, 10–200 g/l of phosphoric acid and 5–100 g/l of sodium sulfate and having a pH below 2.

4,358,351

ALKALINE BATH FOR THE ELECTROLYTIC DEPOSITION OF LOW CARAT YELLOW COLORED GOLD ALLOY LAYERS

Franz Simon, Schwäbisch Gmünd; Werner Huth, Grosskrotzenburg; Bernd Dorbath, and Wolfgang Zilske, both of Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,148

Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020765

Int. Cl.³ C25D *3/62*

U.S. Cl. 204—44 21 Claims

1. An aqueous alkaline bath suitable for electrolytically depositing low carat rose to gold colored gold alloy coatings comprising soluble gold cyanide, soluble copper cyanide, potassium carbonate or potassium bicarbonate and 7.5–40 g/l of zinc as a complex zinc cyanide.

4,358,352

ELECTRODEPOSITION OF PLATINUM FROM A CIS-DIAMMINEDIHALOPLATINUM (II) ELECTROLYTE

Richard N. Rhoda, Suffern, N.Y., assignor to MPD Technology Corporation, Wyckoff, N.Y.

Filed Jun. 22, 1981, Ser. No. 275,725

Int. Cl.³ C25D *3/52*

U.S. Cl. 204—47 2 Claims

1. A platinum electroplating bath containing about 8 grams to about 10 grams per liter of platinum added to the bath as a complex salt from the group consisting of cis diammine dichloroplatinum (II) and cis diammine diiodo platinum (II), a salt from the group consisting of sodium chloride and sodium iodide in the amount of about 15 to about 25 grams per liter and a liquid phase comprising water and dimethylformamide in volume ratios of about 1:1 to about 1:2.

4,358,353

METHOD FOR EXTENDING CATHODE LIFE

Tilak V. Bommaraju, Grand Island, and Krishnan Viswanathan, Niagara Falls, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed May 21, 1981, Ser. No. 265,739

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 11 Claims

1. A method for inhibiting the dissolution of nickel-containing cathodes for use in chlor-alkali diaphragm cells comprising adding an effective amount of an alkali metal sulfite to the electrolyte of said cell during or preceding periods of interrupted current flow to the cell.

4,358,354

URETHANE PHOTOSENSITIVE RESINOUS COMPOSITION

Kiichi Iida; Tadashi Kawamoto, and Kazuhito Miyoshi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

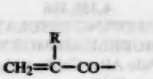
Filed Feb. 23, 1981, Ser. No. 236,954

Claims priority, application Japan, Feb. 28, 1980, 55-24337

Int. Cl.³ C08F *8/00*

U.S. Cl. 204—159.15 18 Claims

1. A urethane photosensitive resinous composition comprising (a) at least one urethane prepolymer having in the middle of the molecule thereof at least two polyol compound monomer residues linked through urethane bonds and having only in the terminals of the molecule thereof at least 1.6 carboxyl groups on the average per molecule and acrylic residues represented by the formula:



(I)

wherein R is a hydrogen atom or a methyl group, each one of said acrylic residues being substantially present in each terminal of the molecule of said at least one urethane prepolymer, (b) at least one ethylenically unsaturated compound, and (c) at least one photopolymerization initiator.

4,358,355

FOUR COMPONENT AMIDE COPOLYMER

Georgina Kalu, Box Hill, and Michael Markus, East Melbourne, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Continuation of Ser. No. 40,451, May 18, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,614

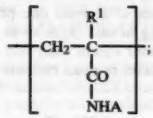
Claims priority, application Australia, May 25, 1978, PD4511

Int. Cl.³ C08F *220/42, 220/52, 265/10, 220/58*

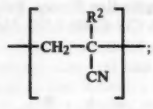
U.S. Cl. 204—159.16 16 Claims

1. A water-soluble copolymer consisting essentially of:

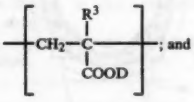
(a) from 65.0 to 98.5 mole percent of repeating units of formula I



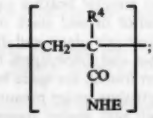
(b) from 0.5 to 10.0 mole percent of repeating units of formula II



(c) from 0.5 to 4.0 mole percent of repeating units of formula III



(d) from 0.5 to 25.0 mole percent of repeating units of formula IV

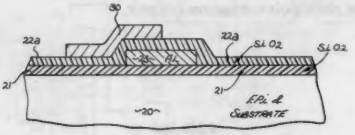


wherein in the formulae R^1, R^2, R^3, R^4 and D are independently chosen from hydrogen, C_1 to C_6 alkyl and C_1 to C_6 hydroxyalkyl; A is chosen from hydrogen and C_1 to C_6 alkyl; and E is C_1 to C_6 hydroxyalkyl.

4,358,356
METHOD FOR SLOPING INSULATIVE LAYER IN BUBBLE MEMORY

Peter J. Silverman, Palo Alto, Calif., assignor to Intel Magnetics, Inc., Santa Clara, Calif.

Filed Apr. 13, 1981, Ser. No. 252,798
Int. Cl.³ C23F 1/02
U.S. Cl. 204—192 E **10 Claims**



1. In the fabrication of a magnetic bubble memory where an insulative layer is formed over a conductive member, and wherein during the formation of said insulative layer rounded regions occur in said layer along the edges of said conductive member, a process for preparing said layer for permalloy members, comprising the steps of:

forming said insulative layer over said conductive member to a thickness which is thicker than its ultimate thickness in said memory; and,

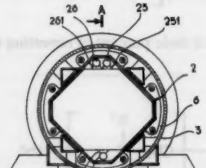
subjecting said insulative layer to ion milling such that the angle of incidence of the ions is approximately zero degrees with respect to the planar surface of said layer and such that the angle of incidence of said ions is approximately 45 degrees at at least one point on said rounded regions occurring in said layer so as to mill said rounded regions to a greater extent than said planar regions;

whereby said rounded regions become flatter.

4,358,357
APPARATUS FOR THE ELECTROLYSIS OF WATER

Gerard Pere, Le Breuil, France, assignor to Creusot-Loire, Paris, France

Filed Feb. 6, 1980, Ser. No. 119,199
Claims priority, application France, Feb. 9, 1979, 79 03392
Int. Cl.³ C25B 9/00, 15/08
U.S. Cl. 204—256 **7 Claims**

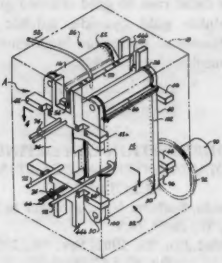


1. In an electrolytic apparatus including a stack of annular spacer frames, whose annular bearing surfaces indicate joint extending to the exterior of said stack of frames; a series of alternating, spaced electrode plates and diaphragms forming a set of cells, said plates and diaphragms being housed in said stack of annular spacer frames, the space between the electrode plates containing electrolyte under pressure; at least one channel extending through said spacer frames for supplying the electrolyte to said cells; and channels extending through said spacer frames for discharging gases formed during electrolysis, the improvement wherein each of said joints is provided with an annular distributor groove for feeding water at a pressure higher than the feed pressure of the electrolyte and an annular collector groove for discharge of liquid flowing through the joints.

4,358,358
STATIC CONTINUOUS ELECTROPHORESIS DEVICE

Percy H. Rhodes, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 6, 1981, Ser. No. 309,293
Int. Cl.³ G01N 27/26, 27/28
U.S. Cl. 204—299 R **15 Claims**



1. Electrophoresis apparatus for separating colloidal and macromolecular cellular particles of the type having a separation chamber in which said particles are separated into at least one fraction band of a cellular species, sample insertion means for inserting a sample stream containing said particles into a buffer solution in said separation chamber and electrode assemblies creating an electrical field in said separation chamber whereby said cells separate into said fraction bands; said apparatus comprising:

a water-tight enclosure housing containing said buffer solution;

said separation chamber being carried within said enclosure housing;

said separation chamber including a pair of spaced opposed moving walls and spaced opposed side walls defining said separation chamber;

a pair of substrate assemblies having opposed front walls facing said separation chamber and one another;

an endless traveling belt carried by each said substrate assembly defining said moving walls;

vacuum means adhering each one of said belts to a respective front wall positively;

means sealing marginal edges of each said traveling belt preventing leakage of said solution past said edges and said side walls; and

drive means for moving said belt about said substrate assembly in an endless fashion without slippage.

4,358,359
TWO-STAGE COAL LIQUEFACTION PROCESS WITH PROCESS-DERIVED SOLVENT HAVING A LOW HEPTANE-INSOLUBLES CONTENT

Joel W. Rosenthal, El Cerrito; Arthur J. Dahlberg, Pinole, and Christopher W. Kuehler, Larkspur, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 73,156, Sep. 7, 1979, Pat. No. 4,255,248. This application Sep. 26, 1980, Ser. No. 191,454
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.³ C10G 1/06, 1/00
U.S. Cl. 208—8 LE **37 Claims**

1. A process for liquefying coal which comprises: forming a coal-solvent slurry by mixing subdivided coal with a solvent; passing said slurry with added hydrogen through a dis-

solving zone to substantially dissolve said coal to produce a first effluent;

contacting at least a portion of said first effluent from said dissolving zone in a reaction zone containing hydrocracking catalyst under hydrocracking conditions to produce a second effluent, having a normally liquid portion containing heptane-insolubles;

cooling at least a portion of said normally liquid portion of said second effluent to precipitate substantially all of said heptane-insolubles; and

recycling at least a portion of the cooled, substantially heptane-insoluble-free, liquid portion for use as coal solvent.

4,358,360

DEWAXING PROCESS

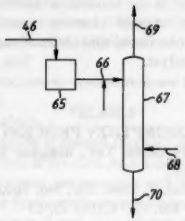
Ferdinand Richter, Hamburg, Fed. Rep. of Germany, assignor to British Petroleum Company Limited, London, England

Filed Jul. 16, 1980, Ser. No. 169,311

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930485; Jul. 27, 1979, 2930486

Int. Cl.³ C10G *73/14*; B01D *3/34*

U.S. Cl. 208—33 **6 Claims**



1. A process for the dewaxing of an oil fraction which process comprises the steps of contacting the mixture with a halogenated hydrocarbon to obtain one fraction relatively free from halogenated hydrocarbon and one fraction associated with halogenated hydrocarbon and recovering halogenated hydrocarbon from the fraction associated therewith by a recovery system involving the use of steam whereby a contaminated stream of process water containing halogenated hydrocarbon and hydrogen halide is formed, neutralizing said process water stream by treatment with an alkali metal hydroxide, carbonate or hydrogen carbonate, or an ion exchanger, distilling the treated stream to obtain a first fraction containing halogenated hydrocarbon and water, allowing the first fraction to settle into layers of halogenated hydrocarbon and water and recycling the layer of halogenated hydrocarbon to the contacting stage upstream of the neutralization of the process water stream.

4,358,361

DEMETALATION AND DESULFURIZATION OF OIL

Alan W. Peters, Moorestown, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 83,021, Oct. 9, 1979, abandoned. This application Jul. 24, 1981, Ser. No. 286,433

Int. Cl.³ C10G *45/08, 65/12*

U.S. Cl. 208—89 **39 Claims**

19. A process for catalytically demetalating and desulfurizing a hydrocarbon oil, which comprises contacting said oil with a regenerable catalyst under processing conditions including a temperature of between about 600° F. and 850° F., a space velocity of between about 0.1 and 0.5 LHSV, a hydrogen pressure of between about 500 and 3000 p.s.i.g. and a hydrogen circulation rate of between about 1,000 and 15,000 s.c.f./bbl of feed, said regenerable catalyst comprising the oxides or sulfides of a Group VI metal and a Group VIII metal deposited within glass supports of controlled pore size.

4,358,362

METHOD FOR ENHANCING CATALYTIC ACTIVITY

Fritz A. Smith, Rye, N.Y., and Samuel A. Tabak, Wenonah, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,293

Int. Cl.³ C10G *53/08*

U.S. Cl. 208—91 **18 Claims**

1. A process for dewaxing a hydrocarbon oil that contains a catalytically deleterious impurity, which process comprises:

treating said hydrocarbon oil with a sorbent consisting of a first molecular sieve zeolite having pores with an effective diameter of at least about 5 Angstroms, said treatment being under sorption conditions effective to remove at least some of said impurity;

and dewaxing said treated oil by contact under dewaxing conditions with a dewaxing catalyst consisting of a second molecular sieve zeolite having pores with an effective diameter of at least about 5 Angstroms, and equal to or smaller than the effective diameter of the pores of said first molecular sieve zeolite.

4,358,363

METHOD FOR ENHANCING CATALYTIC ACTIVITY

Fritz A. Smith, Rye, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,294

Int. Cl.³ C10G *45/12*

U.S. Cl. 208—91 **6 Claims**

1. A process for reducing the pour point of a waxy hydrocarbon fuel oil that boils in the range of about 350° to about 1025° F. and that contains a catalytically deleterious impurity, which process comprises:

contacting said hydrocarbon oil with a sorbent comprising a first molecular sieve zeolite having a Constraint Index of about 1 to 12 and a dried crystal density in the hydrogen form of not less than about 1.6 grams per cubic centimeter, said contacting being under sorption conditions effective to remove a substantial fraction of said deleterious impurity and thereby forming a refined waxy oil;

contacting said refined waxy oil and hydrogen gas under dewaxing conditions that include a temperature of about 725° to 1000° F. with a catalyst consisting of a second molecular sieve zeolite having a Constraint Index of about 1 to 12 and a dried crystal density in the hydrogen form of not less than about 1.6 grams per cubic centimeter, thereby forming a dewaxed fuel oil admixed with a gasoline fraction having a clear research octane number greater than about 86;

and recovering separately said dewaxed fuel oil and said gasoline fraction.

4,358,364

PROCESS FOR ENHANCED BENZENE-SYNTHETIC NATURAL GAS PRODUCTION FROM GAS CONDENSATE

Joseph Klosek, Wescosville, and John C. Tao, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 11, 1981, Ser. No. 262,281

Int. Cl.³ C10G *63/06*

U.S. Cl. 208—92 **14 Claims**

1. Method for converting a hydrocarbon gas condensate feedstock into a substantially benzene product and a synthetic natural gas product comprising:

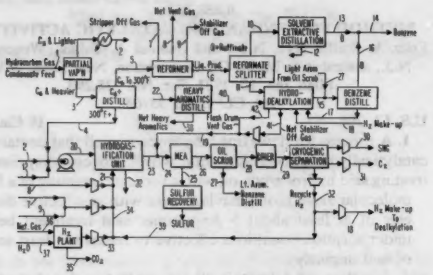
(a) separating said feedstock into three fractions:

(i) C_5 and lighter.

(ii) C_6 to 300° F. B.P.

(iii) B.P. above 300° F.;

(b) catalytically reforming said fraction (ii) to produce a by-product gas stream and a benzene product; and



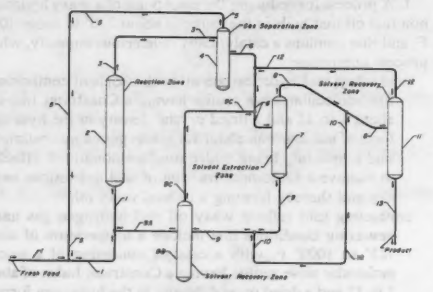
(c) hydrogasifying said fractions (i) and (iii) with the gas stream from the reforming in step (b) to produce synthetic natural gas and additional benzene product.

4,358,365

CONVERSION OF ASPHALTENE-CONTAINING CHARGE STOCKS

LeRoi E. Hutchings, Mt. Prospect, and Algie J. Conner, Downers Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Apr. 24, 1981, Ser. No. 257,042
Int. Cl.[3] C10G *67/04*
U.S. Cl. 208—96 8 Claims



1. A process for the conversion of an asphaltene-containing, hydrocarbonaceous black oil, and the recovery of deasphalted oil therefrom, which comprises the steps of:

(a) reacting said black oil, hydrogen, a hereinafter described recycle stream comprising unreacted asphaltenes, a metal catalyst selected from the iron-group metals and the metals from Group V-B and VI-B, and a deasphalted oil in a reaction zone at conversion conditions selected to convert asphaltenic material into lower-boiling hydrocarbons;

(b) separating the resulting reaction product effluent, in a gas-liquid separation zone, to provide (i) a hydrogen-rich first vaporous phase and, (ii) a first liquid phase, containing metal catalyst and unreacted asphaltenes, and recycling at least a portion of said first vaporous phase to combine with said black oil;

(c) deasphalting said first liquid phase with a hydrocarbon-selective solvent comprising a light hydrocarbon having from about 3 to about 9 carbon atoms per molecule in a solvent extraction zone to provide (i) a solvent-rich second liquid phase, containing deasphalted oil, and, (ii) a solvent-lean mixture of unreacted asphaltenes and metal catalyst;

(d) admixing at least a portion of said solvent-lean mixture of unreacted asphaltenes and metal catalyst with a portion of said solvent-rich second liquid phase, containing deasphalted oil;

(e) removing at least a portion of the hydrocarbon selective solvent from the admixture produced in step (d) in a solvent recovery zone to provide said hereinabove described recycle stream; and

(f) separating a portion of said solvent-rich second liquid phase in a second solvent recovery zone to provide (i) a stream comprising said hydrocarbon-selective solvent, and recycling at least a portion of said stream to said solvent extraction zone and (ii) a substantially solvent-free deasphalted oil.

4,358,366

CATALYTIC HYDROCOKING OF RESIDUA

Harvey E. Alford, Amherst, and Robert A. Rightmire, Northfield, both of Ohio, assignors to Standard Oil Company (Ohio), Cleveland, Ohio

Filed Oct. 1, 1979, Ser. No. 80,831
Int. Cl.[3] C10G *47/12*
U.S. Cl. 208—112 9 Claims

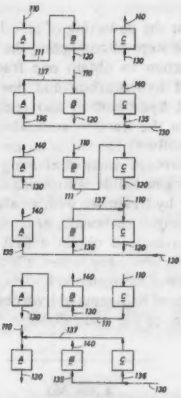
1. A process for delayed coking a shale oil material to produce coke and liquid product, said process comprising heating said shale oil material in the substantial absence of oxygen and supplying hydrogen to said reaction system whereby said liquid product and coke form, said shale oil material containing a hydrocracking catalyst.

4,358,367

ADSORPTION PROCESS

Robert P. Bannon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 7, 1980, Ser. No. 166,653
Int. Cl.[3] C10G *25/03*
U.S. Cl. 208—310 Z 7 Claims



1. An improved process for using three molecular sieve adsorbent beds to effect the resolution of a continuous flow of a vapor-phase hydrocarbon feed mixture containing normal paraffins and non-normal paraffin hydrocarbons into an adsorbate product fraction comprising normal paraffins and a raffinate product fraction comprising non-normal paraffin hydrocarbons, which process comprises repeated sequential performance of the following steps:

step one, in which

the feed mixture is passed through a first adsorbent bed,

effluent is withdrawn from the first bed and passed through a second adsorbent bed

a continuous flow of eluent is passed through a third adsorbent bed,

adsorbate product is withdrawn as an effluent from the third bed, and
raffinate product is withdrawn as an effluent from the second bed;
step two, in which
the feed mixture is passed through the second bed,
the eluent flow is divided into a desorption eluent stream, which contains between 50 and 95 volume percent of the eluent flow, and a purge eluent stream, which contains between 5 and 50 volume percent of the eluent flow,
the purge eluent stream is passed through the first bed,
the desorption eluent stream is passed through the third bed,
effluent is withdrawn from the first bed and is passed through the second bed,
adsorbate product is withdrawn as effluent from the third bed, and
raffinate product is withdrawn as effluent from the second bed;
step three, in which
the feed mixture is passed through the second bed,
effluent is withdrawn from the second bed and passed through the third bed,
the eluent flow is passed through the first bed,
adsorbate product is withdrawn as an effluent from the first bed, and
raffinate product is withdrawn as an effluent from the third bed;
step four, in which
the feed mixture is passed through the third bed,
the eluent flow is divided into a desorption eluent stream, which contains between 50 and 95 volume percent of the eluent flow, and a purge eluent stream, which contains between 5 and 50 volume percent of the eluent flow,
the purge eluent stream is passed through the second bed,
the desorption eluent stream is passed through the first bed,
effluent is withdrawn from the second bed and is passed through the third bed,
adsorbate product is withdrawn as effluent from the first bed, and
raffinate product is withdrawn as effluent from the third bed;
step five, in which
the feed mixture is passed through the third bed,
effluent is withdrawn from the third bed and passed through the first bed,
the eluent flow is passed through the second bed,
adsorbate product is withdrawn as an effluent from the second bed, and
raffinate product is withdrawn as an effluent from the first bed; and
step six, in which
the feed mixture is passed through the first bed,
the eluent flow is divided into a desorption eluent stream, which contains between 50 and 95 volume percent of the eluent flow, and a purge eluent stream, which contains between 5 and 50 volume percent of the eluent flow,
the purge eluent stream is passed through the third bed,
the desorption eluent stream is passed through the second bed,
effluent is withdrawn from the third bed and is passed through the first bed,
adsorbate product is withdrawn as effluent from the second bed, and
raffinate product is withdrawn as effluent from the first bed.

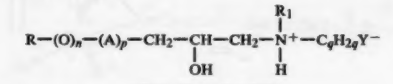
4,358,368

PROCESS FOR THE FROTH FLOTATION OF CALCIUM PHOSPHATE-CONTAINING MINERALS AND FLOTATION AGENTS THEREFOR

Karl M. E. Hellsten, Odsmal, and Anders W. Klingberg, Henan, both of Sweden, assignors to Berol Kemi AB, Stenungsund, Sweden

Continuation of Ser. No. 17,010, Mar. 2, 1979, abandoned. This application May 13, 1981, Ser. No. 263,339
Int. Cl.³ B03D 1/14
U.S. Cl. 209—167 **23 Claims**

1. A process for the froth flotation of calcium phosphate-containing materials in an aqueous flotation bath while preferentially and selectively floating calcium phosphate in the presence of any calcium carbonate, which comprises carrying out the flotation in the presence of an amphoteric surfactant having the formula:



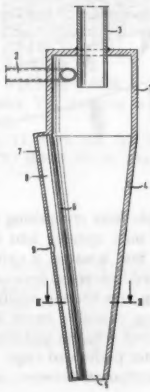
wherein:
R is a hydrocarbon group having from about seven to about twenty-four carbon atoms;
A is an oxyalkylene group having from two to about four carbon atoms;
R_1 is selected from the group consisting of hydrogen and hydrocarbon groups having from one to about four carbon atoms;
Y^- is selected from the group consisting of COO^- and SO_3^-;
n is a number from 0 to 1;
p is a number from 0 to about 5; and
q is a number from 1 to 2.

4,358,369

HYDROCYCLONE

Jouni Matula, and Pentti Vikiö, both of Savonlinna, Finland, assignors to Enso-Gutzeit Osakeyhtiö , Helsinki, Finland

Filed Jun. 1, 1981, Ser. No. 269,256
Claims priority, application Finland, Jun. 2, 1980, 801767
Int. Cl.³ B04C 5/085
U.S. Cl. 209—211 **8 Claims**



1. Improvement in a hydrocyclone for dividing a substance mix into an acceptable fraction and a reject fraction containing dirt substances, said hydrocyclone comprising a separating chamber, including an axially extending part, at least one tan-

gential feed connector for the substance mix opening into said cylinder part and an exit tube coaxial with and opening from said cylinder part for discharging the acceptable fraction, and a sorter cone extending axially from the cylinder part, said sorter cone having at its apex spaced from said cylinder part an exit aperture for the reject fraction, wherein the improvement comprises that the wall of the sorter cone has a reduced thickness area extending for at least a part of the axial length thereof, a strip secured to the outside surface of said sorter cone wall and bridging over and spaced outwardly from said reduced thickness area and forming in combination with said sorter cone wall a closed chamber, whereby as the wall thickness of the sorter cone is substantially reduced from its original amount due to the wear caused by the reject fraction a perforation ensues in the reduced thickness area, the leakage taking place therethrough being recovered in said closed chamber located outside the sorter cone of the hydrocyclone.

4,358,370

BACKWASHABLE FILTER

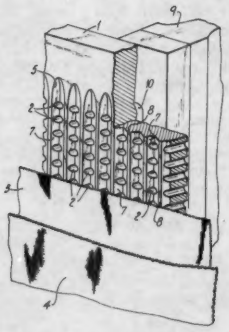
Dennis E. Jameson, Carlisle, and David O. Richards, Wigton, both of England, assignors to British Sidac Limited, Watford, England

Filed Apr. 7, 1981, Ser. No. 251,699

Claims priority, application United Kingdom, Apr. 22, 1980, 8013225

Int. Cl.³ B01D *29/38*

U.S. Cl. 210—415 **15 Claims**



1. In a backwashable filter comprising a generally cylindrical housing with an inlet opening into said housing and an outlet opening from said housing, a cylindrical filter basket within said housing and interposed between said inlet and said outlet, a backwashing arm bearing against the inside of said filter basket and being rotatable about an axis of said filter basket, the improvement wherein said filter basket comprises:

an inner and an outer perforated cage;

a filter medium interposed between said inner and outer cage;

an outer surface of said inner cage having channels to allow liquid to be filtered to contact substantially all of an inner surface of said filter medium; and

means to prevent direct flow of said liquid to be filtered from inside of said inner cage into said backwashing arm.

4,358,371

BACKWASHABLE FILTER

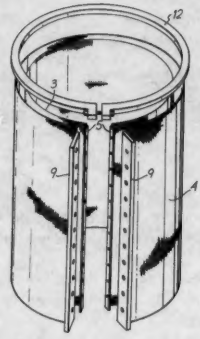
Dennis E. Jameson, Carlisle, and David O. Richards, Wigton, both of England, assignors to British Sidac Limited, Watford, England

Filed Apr. 7, 1981, Ser. No. 251,802

Claims priority, application United Kingdom, Apr. 22, 1980, 8013158

Int. Cl.³ B01D *29/38*

U.S. Cl. 210—415 **15 Claims**



1. In a backwashable filter including a generally cylindrical housing, an inlet opening into said housing and an outlet opening from said housing, a cylindrical filter basket within said housing being interposed between said inlet and said outlet, and a backwashing arm bearing against an inside surface of said filter basket, said backwashing arm being rotatable about a vertical axis of said filter basket, the improvement wherein said filter basket comprises:

a perforated core;

a filter medium wrapped around said perforated core;

a perforated flexible outer clamping band wrapped around an outside surface of said filter medium; and

tensioning means connected to said flexible outer clamping band, said tensioning means applying tension to said clamping band to clamp said filter medium tightly against said perforated core.

4,358,372

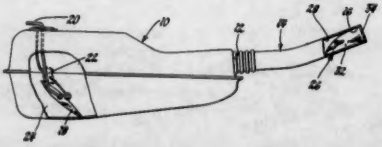
FILLER TUBE FUEL STRAINER

Roger J. Lundquist, Grand Ledge, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 21, 1981, Ser. No. 226,633

Int. Cl.³ B01D *35/02*

U.S. Cl. 210—172 **1 Claim**



1. In a liquid fuel tank assembly comprising a tank, a filler tube providing a tank inlet for placing fuel in the tank, and a tank outlet for removing fuel from the tank, the improvement comprising:

a fuel strainer in said filler tube, said strainer being generally sock-shaped and consisting only of an inner sock, an outer sock receiving said inner sock therein in spaced relation so that a space for containing water to be trapped is provided

therebetween, and a support ring secured to the open ends of said inner and outer socks and removably supporting said strainer in said filler tube, said inner sock being made of a mesh fabric that coalesces water and passes fuel therethrough, said outer sock being made of a mesh fabric that passes fuel but not water therethrough, wherein fuel introduced through said filler tube into said tank flows through said strainer and any water in the fuel coalesces on said inner sock and is trapped in said space between said inner and outer socks;

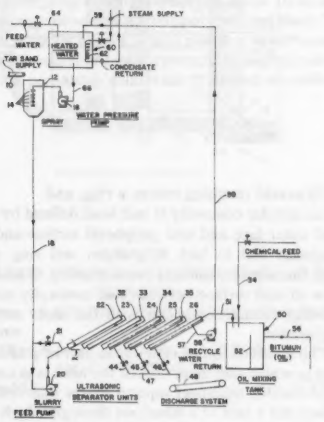
said fuel strainer being periodically removable from said filler tube with water trapped in said space, the trapped water then being removed and said fuel strainer then being replaced in said filler tube.

4,358,373

CONTINUOUS APPARATUS FOR SEPARATING HYDROCARBON FROM EARTH PARTICLES AND SAND

Duncan B. Jubenville, Windsor, Canada, assignor to Rock Oil Corporation, Detroit, Mich.

Filed Dec. 8, 1980, Ser. No. 213,956
Int. Cl.³ B01D *17/02*
U.S. Cl. 210—181 **7 Claims**



1. A separator apparatus for separating hydrocarbons from earth and sand particles in an aqueous suspension comprising:

(A) an inclined duct having two parallel vertical sides, a top, and a bottom,

(B) a longitudinal partition between said top and bottom of said duct being located closer to said bottom than said top, said partition having a plurality of transverse slots covered by angularly upwardly extending baffles,

(C) a plurality of ultrasonic transducers alternately spaced along opposite vertical sides of said duct for projecting horizontal beams of vibrations continuously across the upper portion of said duct between said partition and said top,

(D) means for flowing said suspension up from the lower end of said duct through said upper portion of said duct across said beams of ultrasonic vibrations,

(E) means for removing solid particles separated by said beams which solid particles settle through said slots in said partition below said baffles into the lower portion of said duct,

(F) means for removing hydrocarbons separated and cavitated with gas by said ultrasonic vibration, which hydrocarbons float to the upper end of said duct, and

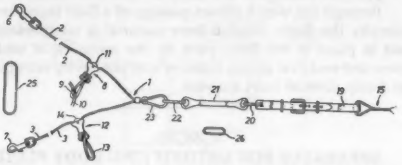
(G) means for recycling the water back to said lower end from below the floated hydrocarbons near the upper end of said duct to suspend more of said hydrocarbon-containing particles flowing into the lower end of said duct.

4,358,374

STRIPPING APPARATUS FOR THE REMOVAL OF CONTAMINANTS FLOATING ON A LIQUID

Alajos Morva, and Ferenc Somogyi, both of Budapest, Hungary, assignors to Mirköz Diesel es Hütötechnikai Szövetkezet, Budapest, Hungary

Filed May 7, 1979, Ser. No. 36,684
Int. Cl.³ B01D *17/02*
U.S. Cl. 210—242.3 **2 Claims**



1. An apparatus for the removal of contaminants floating on a liquid, comprising:

a basin containing a liquid having a layer of contaminants floating thereon;

a separator in said basin having a housing open at the top and bottom;

at least one flotation device connected to said housing for maintaining the open top thereof above the top of said layer;

a blade forming an upwardly sloping ramp extending from a location beneath the surface of said liquid and connected to an upper edge of said housing for guiding said contaminants into said housing:

at least one nozzle in said basin for directing a stream of forced air against said blade and driving said contaminants upwardly therealong into said housing whereby said contaminants form an enclosed contaminant layer therein;

a discharge tube extending downwardly into said housing having an upper inlet end positioned with the opening above the surface of said liquid and below the top of said enclosed contaminant layer; and

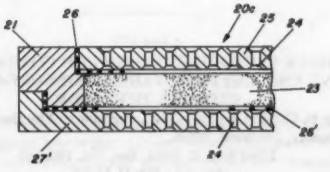
a flexible conduit connected between a lower outlet end of said discharge tube and a drainpipe in said basin for the removal of said enclosed contaminants.

4,358,375

FILTER PACK

Stanley D. Wood, Chester, Va., assignor to Allied Corporation, Morris Township, N.J.

Filed Sep. 11, 1979, Ser. No. 74,279
Int. Cl.³ B01D *29/08, 27/02*
U.S. Cl. 210—266 **12 Claims**



1. A filter pack, in which finely divided inert material is bound, for use in a spin pot, comprising:

a. a wall, defining a cavity in which a finely divided inert material is placed;

b. a cap, having a plurality of apertures therethrough which

are small enough to prevent passage of the finely divided inert material therethrough but which allow passage of a fluid therethrough, and retaining the finely divided inert material in the cavity defined by said wall;

c. a first cover, allowing passage of a fluid therethrough, a portion of the external periphery of said first cover having a shape similar to but slightly smaller than a matching portion of the internal periphery of said wall; and

d. a first screen member, press fitted between the portion of the external periphery of said first cover and the portion of the internal periphery of said wall, and covering the exposed portion of the cavity, said first screen member comprising at least one screen having a mesh size which prevents passage of the finely divided inert material therethrough but which allows passage of a fluid therethrough;

whereby the finely divided inert material is compressed and held in place in the filter pack by the intrusion of said first cover and said first screen member into the cavity occupied by the finely divided inert material.

4,358,376

APPARATUS FOR DETOXIFYING BODY FLUID

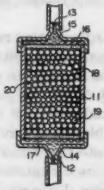
Yousuke Moriuchi, Fujinomiya, and Atsushi Shimizu, Tokyo, both of Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 200,915

Claims priority, application Japan, Oct. 29, 1979, 54-139465; Oct. 29, 1979, 54-139467

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—282 **9 Claims**



1. An apparatus for detoxifying a body fluid comprising:

a columnar hollow container having an inlet and an outlet for body fluid; and

a plurality of noncoated petroleum pitch activated carbon particles;

said container being filled with (i) said particles and (ii) a physiologically acceptable filling liquid containing between 50 and 5,000 units of heparin per gram of said activated carbon particles; and

said activated carbon particles having been washed in a physiologically acceptable cleaning solution with ultrasonic waves until the number of carbon dust fine particles released in the cleaning solution is less than 100 particles/ml for particles of more than 2μ particle size and less than 10 particles/ml for particles of more than 5μ particle size.

4,358,377

SHEAR-VECTORING DESIGN FOR COMPOSITE CASING END AND REMOVABLE, PRESSURE-LOCKING CLOSURE THEREFOR

George B. Clark, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 2, 1980, Ser. No. 183,663

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—323.2 **6 Claims**

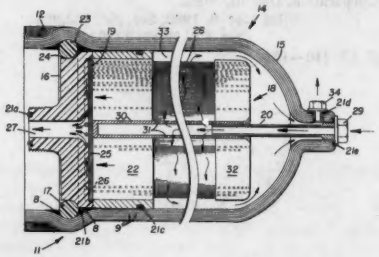
1. In the combination of an open-ended section of an internally pressurizeable casing and a closure assembly therefor, inset from said casing section end, wherein said closure assembly comprises a head, having opposed inner and outer surfaces and a peripheral surface connecting said surfaces, and a retaining means for said head seated in a groove in the interior surface of the casing-section wall,

wherein said casing section is formed of helicallywound, resin-coated fibers and said groove is of generally semicircular cross-section and defined by the adjacent surfaces of a pair of annular resin bodies, of generally triangular cross-section, the portions of said fibers passing over said resin bodies, to said open end, being bowed outwardly in conformation to them and defining an annular bulge, having an apex, in the outer surface of said section,

the improvement comprising:

(1) circumferentially wound fibers in said resin bodies, the resin and fibers together constituting hoops of resin-coated fibers,

(2) a hoop of resin-coated fibers circumferentially wound around the portions of the helically-wound fibers between said casing-section end and the apex of said bulge,



(3) as said retaining means, a ring, and

(4) an annular concavity in said head defined by the juncture of said outer face and said peripheral surface and adapted to seat against and to lock in position said ring when urged against the same by internal pressurization of said casing, the portion of said surface between said concavity and said inner face being slidingly engaged with the inner surface of said casing section.

6. The combination of claim 1, as part of a reverse osmosis device in which said inner face of the head is in contact with a fluid-permeable tubesheet support means intervening between said face and a face of a tubesheet through which pass in sealing engagement therewith a plurality of hollow fibers, the lumens of which terminate in and open onto said tubesheet face, said inner face of the head being adapted to receive and convey, to a discharge means, fluid passing from said fiber lumens through said support means.

4,358,378

SELECTIVE PERMEABLE MEMBRANES AND PROCESS FOR PREPARING THE SAME

Akio Iwama; Hiroshi Iwahori, and Yoshitaka Kazuse, all of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 31, 1981, Ser. No. 249,587

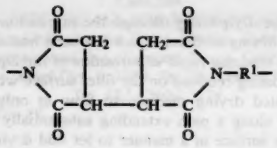
Claims priority, application Japan, Mar. 31, 1980, 55-42682

Int. Cl.³ B01D *39/16*; B05D *5/00*

U.S. Cl. 210—500.2 **9 Claims**

1. A process for preparing a selective permeable membrane which comprises:

applying to a supporting substrate a membrane solution prepared by dissolving in an organic solvent a polyimide polymer comprising principally a repeating unit represented by the general formula (I):



wherein R^1 represents a divalent organic group, and a liquid swelling agent having a coagulation value with respect to said polyimide polymer of about 50 to about 200 and a boiling point of about 50° C. to about 120° C. under atmospheric pressure, wherein the coagulation value of the swelling agent is defined as the minimum amount in ml of the swelling agent added to 50 ml of a 2% by weight solution of said polyimide polymer of N-methylpyrrolidone causing white-turbidity due to separation of the polyimide polymer at 25° C.,

evaporating at least a part of said swelling agent, and

coagulating said polyimide polymer by contacting the polyimide polymer with a coagulating solvent which does not dissolve said polyimide polymer but is compatible with said organic solvent and said swelling agent, wherein the membrane forming solution comprises about 10 to about 40% by weight of said polyimide polymer and about 30 to about 300 parts by weight of said swelling agent based on 100 parts by weight of said polymer in an organic solvent.

9. A selective permeable membrane produced according to claim 1.

4,358,379

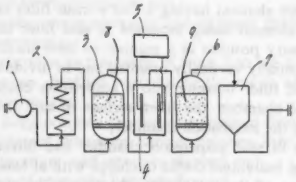
PROCESS FOR REFINING ELECTRIC INSULATING LIQUIDS

Noboru Inoue, 6-2-3-1205, Nishinakajima, Yodogawa-ku, Osaka, Japan

Filed Nov. 21, 1980, Ser. No. 209,297

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—663 19 Claims



1. A process for refining an electric insulating liquid to remove contaminant particles present as impurities in insulating liquids therefrom which comprises applying an electric field to the electric insulating liquid under a voltage sufficient to charge the contaminant particles; contacting said electric insulating liquid with at least one porous absorbent having ion radicals in its structure and a pore size smaller than the size of the molecules of the treated insulating liquid to remove the charged contaminants having a size smaller than the pore size of the absorbent; and then passing the liquid through means for removing contaminating particles larger than the pore size of the absorbent and recovering the purified electric insulating liquid.

4,358,380

METHOD OF REPRODUCING WATER-SOLUBLE CUTTING AGENTS

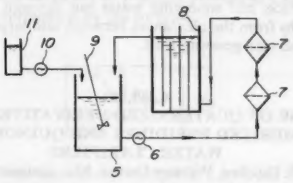
Masami Hasegawa, Fuji; Utaro Sakai, Hamamatsu, and Takahisa Naitoh, Fuji, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Maruchi Kohken Co., Ltd., Hamamatsu, both of, Japan

Continuation of Ser. No. 82,336, Oct. 5, 1979, abandoned. This application Mar. 25, 1981, Ser. No. 247,278

Claims priority, application Japan, Oct. 5, 1978, 53-122875

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—679 9 Claims



1. A method of recycling and purifying an aqueous solution of a water-soluble cutting agent, comprising the step of filtering a used solution of water-soluble cutting agent containing water, a water-soluble cutting agent and an oil contaminant through an oil-water separating filter, said oil-water separating filter comprising a porous sheet having thereon an oil-water separating layer, said layer consisting essentially of a water-insoluble and water-absorbing gel layer having both an oil-resistant and oil-repellent function and a water-permeable and water-absorbing function, said layer being formed on the portion of said porous sheet which is contacted by said cutting agent.

4,358,381

SLUDGE CONDENSATION AND DEWATERING SYSTEM

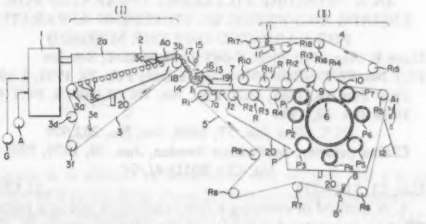
Tetsuo Takeuchi, Ichikawa, and Shoichi Nakamura, Yachiyo, both of Japan, assignors to Ichikawa Woolen Textile Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1980, Ser. No. 219,594

Claims priority, application Japan, Dec. 28, 1979, 54-184012[U]

Int. Cl.³ B01D *33/04*

U.S. Cl. 210—727 7 Claims



1. The process of condensing and dewatering a sludge to obtain a cake of low water content which consists of feeding the sludge to a flocculation reaction zone and mixing said sludge with a flocculation agent in said flocculation reaction zone to thereby form a sludge flock, introducing said sludge flock from said flocculation reaction zone into a holding zone, thickening said sludge flock in said holding zone by passing said sludge flock on a running endless belt filter inclined upwardly in the direction of flow of said sludge flock whereby a

condensed lumpy sludge is obtained, dewatering said condensed lumply sludge by addition thereto of a dewatering aid material and comminuting whereby said lumpy sludge is converted into a finely divided form sludge, carrying said finely divided sludge between two filter cloths which travel for a portion closely arranged to each other and converging toward each other, for a portion diverging away from each other and for a portion wound around a large perforated roll (6) with the condensed sludge between said two filter cloths, applying pressure to said filter cloths by means of pressing rolls located around said large roll (6) in amount increasing along the direction of travel of the condensed sludge, the filter cloths being formed of short fibers on a surface of a foundation fabric oriented traversely to a plane which is perpendicular to the filter cloth surface, and squeezing water out through each of the filter cloths from the clearances between said large perforated roll (6) and said pressing rolls.

4,358,382

USE OF QUATERNIZED DERIVATIVES OF POLYMERIZED PYRIDINES AND QUINOLINES AS WATER CLARIFIERS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 32,044, Apr. 23, 1979, Pat. No. 4,297,484. This application Mar. 12, 1981, Ser. No. 242,862

Int. Cl.³ C02F *1/56*

U.S. Cl. 210—736 **9 Claims**

1. A process of clarifying aqueous systems containing suspended solid particles which comprises adding to said aqueous system 0.005 to 10,000 p.p.m., sufficient to flocculate said suspended particles, of a quaternized derivative of polymerized pyridine or quinoline compounds, which compounds prior to polymerization are selected from the group consisting of pyridine, 2-methyl pyridine, 4-methyl pyridine, 4-phenyl pyridine, 4-ethyl pyridine, 2-hydroxypyridine, 2,4-lutidine, quinoline, 2-methyl quinoline and 4-methyl quinoline, the nitrogen atoms of which are quaternized by treating said polymerized compounds with a quaternizing agent selected from the group consisting of methyl iodide, ethyl iodide, propyl iodide, ethyl bromide, benzyl bromide, butyl bromide, dodecyl bromide, benzyl chloride, dodecyl bromide, ethyl bromoacetate, dimethyl sulfate, tetradecyl bromide and octyl bromide at a temperature of at least about 100° C., agitating the mixture to flocculate the suspended particles and then permitting the flocculated suspended particles to settle out and leave a clarified supernatant liquid.

4,358,383

METHOD OF CLEANING A FILTER SURFACE IN SITU IN A PRESSURE FILTERING APPARATUS FOR LIQUIDS AND PRESSURE FILTERING APPARATUS FOR CARRYING OUT THE METHOD

Hans E. Asp, Rud 2658, S-663 02 Hammarö, Sweden

PCT No. PCT/SE80/00181, § 371 Date Feb. 29, 1981, § 102(e) Date Jan. 16, 1981, PCT Pub. No. WO81/00058, PCT Pub. Date Jan. 22, 1981

PCT Filed Jun. 27, 1980, Ser. No. 232,039

Claims priority, application Sweden, Jun. 29, 1979, 7905736

Int. Cl.³ B01D *41/04*

U.S. Cl. 210—771 **11 Claims**

1. A method of cleaning a filter surface in situ in a pressure filtering apparatus for liquids of the kind in which the filter surface is at least generally vertically oriented and stationarily mounted in a filter housing for dividing the interior thereof into a suspension chamber and a filtrate chamber, between which chambers a substantial pressure difference is maintained during each filtering procedure in order to separate a filtrate from a liquid suspension supplied to the suspension chamber while leaving on the filter surface a moist coating at least mainly consisting of finely divided solid substances, the cleaning operation comprising the steps of

(A) first draining off both the liquid suspension from the suspension chamber and the filtrate from the filtrate chamber,

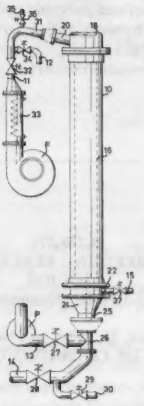
(B) subsequently passing through the suspension chamber a gaseous drying medium which has been heated to a temperature ensuring rapid vaporization of the liquid content of the coating retained on the filter surface while causing said heated drying medium to flow at only moderate velocity along a path extending substantially parallel to the filter surface in a manner to let said drying medium come into superficial contact with the coating thereon in order to thereby effect successive layerwise drying of the coating,

(C) promoting detachment of dried coating portions from any moist rest of coating still remaining on the filter surface as well as from the filter surface itself by temporarily causing a gaseous cleansing medium to flow through the suspension chamber along substantially the same path as said drying medium but at a substantially higher velocity, and

(D) removing at least a major portion of detached dried coating from the suspension chamber before again admitting liquid suspension thereto for resumed filtering.

8. In a pressure filtering apparatus for liquids the combination of

(a) a filter housing,



(b) a filter element having a fine porous filter surface, said filter element being mounted in said filter housing in a stationary position in a manner to have its filter surface substantially vertically oriented and to divide the interior of said filter housing into a suspension chamber and a filtrate chamber, the filter surface of said filter element facing the suspension chamber,

(c) each of said suspension chamber and filtrate chamber having individual outlet openings with at least the outlet opening of the suspension chamber being disposed at a level below the filter surface of said filter element,

(d) means for supplying under pressure a liquid suspension to said suspension chamber,

(e) an tangential inlet opening to said suspension chamber disposed in the upper part thereof,

(f) means for alternately supplying to said inlet opening a heated gaseous drying medium under a relatively lower pressure and a gaseous cleansing medium under a relatively higher pressure, and

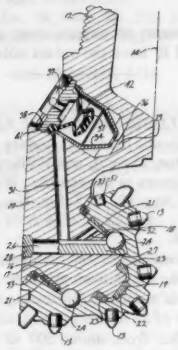
(g) means for causing both of said media to flow through said suspension chamber along a path extending substantially parallel and close to the filter surface of said filter element so as to come into superficial contact with any coating formed on said surface.

4,358,384

COMPOSITE GREASE FOR ROCK BIT BEARINGS

Alan L. Newcomb, Rancho Palos Verdes, Calif., assignor to Smith International Inc., Newport Beach, Calif.

Filed Oct. 6, 1980, Ser. No. 194,587
Int. Cl.[3] C10M 5/14
U.S. Cl. 252—19 40 Claims



1. A grease composition for lubricating a rock bit for drilling subterranean formations comprising:
copper particles in the range of from 3 to 9% by weight;
molybdenum disulfide particles in the range of from 6 to 14% by weight;
a metal soap wherein the metal is selected from the group consisting of aluminum, barium, calcium, lithium, sodium and strontium, and mixtures thereof; and
a balance of primarily hydrocarbon oil.

14. A rock bit for drilling subterranean formations comprising a bit body including a plurality of journal pins each having a bearing surface;
a cutter cone mounted on each journal pin and including a bearing surface;
a pressure compensated grease reservoir in communication with such bearing surfaces; and
a grease in the grease reservoir and adjacent the bearing surfaces comprising:
copper particles in the range of from 3 to 9% by weight;
molybdenum disulfide particles in the range of from 6 to 14% by weight;
a metal soap wherein the metal is selected from the group consisting of aluminum, barium, calcium, lithium, sodium, and strontium, and mixtures thereof; and
a balance of primarily hydrocarbon oil.

27. A method for lubricating a rock bit for drilling subterranean formations, the rock bit including a bit body and a plurality of cutter cones mounted on the bit body with journal bearings, comprising the steps of:
evacuating a portion of the rock bit body including the journal bearings; and
introducing grease into the evacuated portion of the rock bit body and journal bearings, said grease comprising:
copper particles in the range of from 3 to 9% by weight;
molybdenum disulfide particles in the range of from 6 to 14% by weight;
a metal soap wherein the metal is selected from the group consisting of aluminum, barium, calcium, lithium, sodium and strontium, and mixtures thereof; and
a balance of primarily hydrocarbon oil.

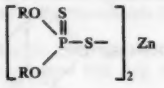
4,358,385

LUBRICATING OIL COMPOSITION

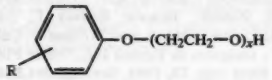
Benjamin H. Zoleski, Beacon; Rodney L. Sung, Fishkill; Stephen A. Levine, Fishkill, and William P. Cullen, Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,581
Int. Cl.[3] C10M 1/48
U.S. Cl. 252—32.7 E 10 Claims

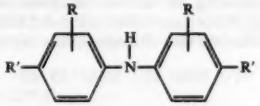
1. A crankcase lubricating oil composition having a Total Base Number ranging from about 5 to 40 comprising a major proportion of a mineral lubricating oil containing from about 0.1 to 5 weight percent of at least one overbased calcium sulfonate, from about 0.1 to 1 weight percent of a zinc dithiophosphate represented by the formula:



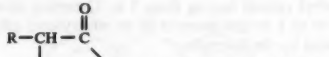
in which R is a hydrocarbyl radical or a hydroxy substituted hydrocarbyl radical having from 4 to 12 carbon atoms, from about 0.025 to 1 weight percent of an ethoxylated alkylphenol represented by the formula:



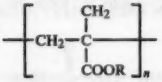
wherein R represents an alkyl radical having from 4 to 20 carbon atoms and n has an average value ranging from about 4 to about 30, from about 0.05 to 1 weight percent of an alkylated diphenylamine represented by the formula:



in which each R is an alkyl radical having from 1 to 4 carbon atoms and each R' is an alkyl radical having from about 4 to 16 carbon atoms, from about 0.5 to 10 weight percent of nitrogen-containing dispersant represented by the formula:

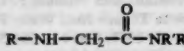


wherein R is alkenyl of from 50 to 200 carbons and x is an integer of 0 to 10, from about 0.25 to 2.5 weight percent of a polymethacrylate having the formula:



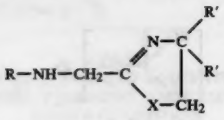
where R is an aliphatic radical of from 1 to 20 carbons and n is an integer of between about 600 and 35,000, from about 0.5 to 10 weight percent of an ethylene propylene copolymer having a molecular weight ranging from about 20,000 to 50,000, and,

from about 0.1 to 5 weight percent of an N-alkylglycine derivative selected from the group consisting of:



(a)

in which R is a hydrocarbyl radical having from about 10 to 25 carbon atoms, R′ represents hydrogen or an alkyl, hydroxyalkyl or an aminoalkyl radical having from 1 to 5 carbon atoms and R″ represents an alkyl or hydroxyalkyl radical having from 1 to 5 carbon atoms or a $—CH_2—CH_2—NH)_xH$ radical in which x has a value from 1 to 3, and



(b)

in which X represents an oxygen atom or a divalent N—R′ radical and R and R′ have the values noted above.

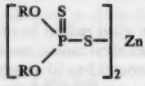
4,358,386

MARINE CRANKCASE LUBRICANT

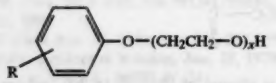
Benjamin H. Zoleski, Beacon; Rodney L. Sung, Fishkill; Stephen A. Levine, Fishkill, and William P. Cullen, Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,584
Int. Cl.³ C10M *1/48*
U.S. Cl. 252—32.7 E **10 Claims**

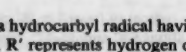
1. A crankcase lubricating oil composition having a Total Base Number ranging from about 3 to 10 comprising a major proportion of a mineral lubricating oil containing from about 1 to 5 weight percent of at least one overbased salt selected from the group consisting of calcium alkylphenolate, sulfurized calcium alkylphenolate and mixtures thereof, from about 0.1 to 1 weight percent of a zinc dithiophosphate represented by the formula:



in which R is a hydrocarbyl radical or a hydroxy substituted hydrocarbyl radical having from 3 to 12 carbon atoms, from about 0.05 to 1 weight percent of an ethoxylated alkylphenol represented by the formula:

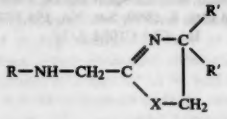


wherein R represents an alkyl radical having from 4 to 20 carbon atoms and n has an average value ranging from about 4 to about 30 and, from about 0.2 to 5 weight percent of a N-alkylglycine derivative selected from the group consisting of:



(a)

in which R is a hydrocarbyl radical having from about 10 to 25 carbon atoms, R′ represents hydrogen or an alkyl, hydroxyalkyl or an aminoalkyl radical having from 1 to 5 carbon atoms and R″ represents an alkyl or hydroxyalkyl radical having from 1 to 5 carbon atoms or a $—CH_2—CH_2—NH)_xH$ radical in which x has a value from 1 to 3, and



(b)

in which X represents an oxygen atom or a divalent N—R′ radical and R and R′ have the values noted above.

4,358,387

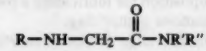
CYLINDER LUBRICATING OIL COMPOSITION

Benjamin H. Zoleski, Beacon; Rodney L. Sung, Fishkill; Stephen A. Levine, Fishkill, and William P. Cullen, Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,582
Int. Cl.³ C10M *1/40*
U.S. Cl. 252—33.4 **15 Claims**

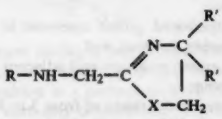
1. A cylinder lubricating oil composition having a Total Base Number in the range from about 50 to 100 comprising a major proportion of a mineral lubricating oil, from about 10 to 20 weight percent of an overbased calcium sulfonate having a Total Base Number from about 300 to 450, and a friction modifying amount of an N-alkylglycine derivative selected from the group consisting of

(a) an N-alkylglycine having the formula:



in which R is a hydrocarbyl radical having from about 10 to 25 carbon atoms, R′ represents hydrogen or an alkyl, hydroxyalkyl or an aminoalkyl radical having from 1 to 5 carbon atoms and R″ represents an alkyl or hydroxyalkyl radical having from 1 to 5 carbon atoms, or a $—CH_2—CH_2—NH)_xH$ radical in which x has a value from 1 to 3, and

(b) an N-alkylglycine derivative having the formula:



in which X represents an oxygen atom or a divalent N-R′ radical and R and R′ have the values noted above.

4,358,388

MAGNETIC POLYMER LATEX AND PREPARATION PROCESS

Jean-Claude Daniel, Fontenay/Sous/Bois; Jean-Luc Schuppiser, Claye-Souilly, both of France, and Marc Tricot, deceased, late of Andilly, France (by Nicole Tricot, heir), assignors to Rhone Poulenc Industries, Paris, France

Filed Apr. 16, 1981, Ser. No. 254,778
Claims priority, application France, Apr. 18, 1980, 80 08696
Int. Cl.³ H01F *1/00, 1/26*
U.S. Cl. 252—62.54 **22 Claims**

1. A magnetic-polymer latex comprising:

(a) less than 65% by weight of hydrophobic vinyl aromatic polymer particles having a mean diameter between 0.03 and 5 microns; and

(b) a magnetically-charged material in an amount from 0.5 to 50% by weight with respect to the polymer portion of said

particles, said magnetically-charged material being dispersed within said polymer particles.

4,358,389

AGENT FOR DE-ICING AND PROTECTING AGAINST ICING-UP

Inge König-Lumer, Mühldorf; Ulrich Schwenk, Burghausen; Rene Salvador, Altötting, and Josef Kapfinger, Burgkirchen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 244,976

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040376

Int. Cl.³ C09K *3/18*

U.S. Cl. 252—70 **10 Claims**

1. Agent for de-icing and protecting against icing-up, consisting essentially of (a) 40 to 65% by weight of a glycol selected from the group consisting of alkylene glycols having 2 to 3 carbon atoms and oxalkylene glycols having 4 to 6 carbon atoms; (b) 35 to 60% by weight of water; (c) 0.05 to 1.5% by weight of a thickener comprising cross-linked polyacrylates having a viscosity of 1,000 to 50,000 mPa.s in a 0.5% strength by weight aqueous solution at 20° C. and a pH value of 7.5 to 10, and having a laminar flow behavior in a 0.1 to 1.5% strength by weight aqueous solution at +20° C., 0° C. and −10° C. and a pH value of 7.5 tp 10, at a shear rate of up to at least 20,000 seconds^{-1}; (d) 0.05 to 1% by weight of a water-insoluble component comprising a mixed-base mineral oil comprising paraffin hydrocarbons and naphthenes; (e) 0.05 to 1% by weight of a surface-active agent comprising alkali metal alkylarylsulfonates; (f) 0.01 to 1% by weight of at least one corrosion inhibitor; and (g) a quantity of at least one alkaline compound selected from the group consisting of alkali metal carbonates, bicarbonates or hydroxides and amines, such that the agent has a pH value of 7.5 to 10, the quantity of the components (a) and (b) in the agent being at least 94% by weight, relative to the weight of the agent.

4,358,390

ZINC ELECTRODE

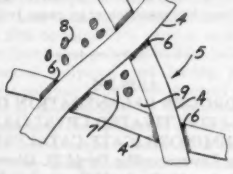
Alain Coulombeau, La Roche Blanche, and Georges Peyron, Riom, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Division of Ser. No. 58,030, Jul. 16, 1979, Pat. No. 4,263,383. This application Dec. 8, 1980, Ser. No. 214,573

Claims priority, application France, Jul. 25, 1978, 78 22199

Int. Cl.³ H01M *4/48, 4/62*

U.S. Cl. 252—182.1 **4 Claims**



1. A process for producing a zinc electrode designed to be used in a secondary generator having at least one active portion, characterized by the following steps:

(a) producing an open porosity of at least 60% within the active portion, and

(b) incorporating electron-conductive fibers within the active portion in such a manner that the active material in the discharged state, at least before the first charge, consists of zinc oxide particles which are distributed practically uniformly throughout the active portion;

the fibers being inert under the conditions of use;

the fibers having no preferential orientation and being assembled at least in part by bridges due to at least one elastomeric material, referred to as elastomeric binder, which is inert under the conditions of use; the fibers and the elastomeric binder thus forming an elastic and porous structure with voids located between the fibers and communicating with each other; and

the active material being arranged in the voids between the fibers.

4,358,391

COMPOSITIONS CONTAINING LIQUID CRYSTAL PHASES

Heino Finkelmann; Günther Rehage, both of Clausthal-Zellerfeld, and Georg Kollmann, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 198,401

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, 2944591

Int. Cl.³ G02F *1/13;* C09K *3/34;* C07F *7/08;* C08G *77/40*

U.S. Cl. 252—299.01 **6 Claims**

1. A composition having a liquid crystal phase which contains at least one liquid crystalline component consisting of an organopolysiloxane backbone having at least two mesogenic molecules chemically bonded thereto as side chains, in which the component is obtained from the reaction of an organohydrogenpolysiloxane containing Si-bonded hydrogen with vinyl-substituted mesogenic molecules.

4,358,392

LIQUID CRYSTAL-BASE COMPOSITION FOR AN ELECTRO-OPTICAL DEVICE

Jacques Cognard, Chezard, and Trung H. Phan, Tannay, both of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

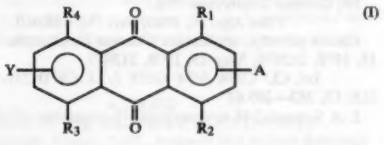
Filed Feb. 24, 1981, Ser. No. 237,735

Claims priority, application Switzerland, Mar. 14, 1980, 2010/80

Int. Cl.³ C09K *3/34;* G02F *1/13*

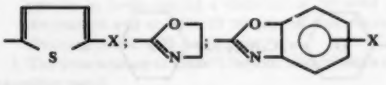
U.S. Cl. 252—299.1 **11 Claims**

1. A liquid crystal guest-host composition containing a liquid crystalline host and a guest pleochroic colouring agent for use in an electro-optical device, wherein said colouring agent is an anthraquinone compound represented by the general formula (I):



(I)

in which R_1 is an amino group which can be alkylated or acylated, an alkoxy group or a hydroxy group; R_2, R_3 and R_4 which are identical or different are each a hydrogen atom, an amino group which can be alkylated or acylated, a substituted or unsubstituted an alkoxy group, a hydroxy group, a nitro group, a halogen atom or a cyano group; A is selected from the group consisting of



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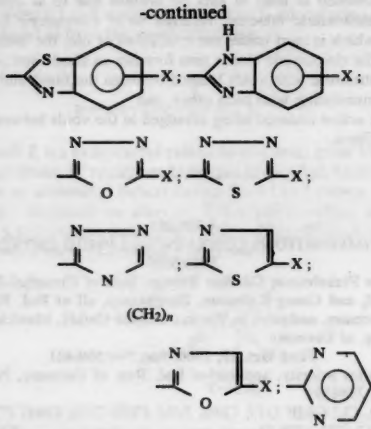


in which X is a hydrogen atom, a halogen atom, a mercaptan group, a cyano group, a cyclic, branched or straight alkyl chain, an alkoxyalkyl chain, a hydroxyalkyl chain, a pyridyl group, a benzyl group, a phenyl group, a para-alkylphenylene group, a para-alkoxyphenylene group, a para-cyanophenylene group, with at most 10 C atoms, or a group selected from OR', SR', OOCR', OOC—C_6H_4—R', SOC—C_6H_4—R', NHR', NHCOR', OCOOR' and OCOO—C_6H_4—R', in which R' is a hydrogen atom, a cyclic, branched or straight alkyl chain, an ethoxycarbonylalkyl chain, a cyanoalkyl chain or a phenyl group, with at most 10 C atoms, and n is an integer of from 3 to 7, and Y is a hydrogen atom or a side chain having the same definition as A.

4,358,393

NEMATIC LIQUID CRYSTALS OF 5-CYANO-2-[4-ACYLOXYPHENYL]-PYRIMIDINES AND MIXTURES CONTAINING THE SAME

Horst Zaschke; Dietrich Demus, and Sylvia Deresch, all of Halle, German Democratic Rep., assignors to VEB Werk für Fernsehelektronik im VEB Kombinat Mikroelektronik, Berlin, German Democratic Rep.

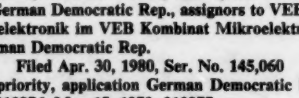
Filed Apr. 30, 1980, Ser. No. 145,060

Claims priority, application German Democratic Rep., May 15, 1979, 212876; May 15, 1979, 212877

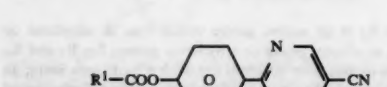
Int. Cl.³ C09K *3/34;* G02F *1/13;* C07D *239/32*

U.S. Cl. 252—299.61 **10 Claims**

1. A 5-cyano-2-[4-acyloxyphenyl]-pyrimidine of the formula



wherein R^1 is



and n=1 to 10.

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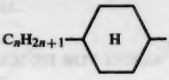


and n=1 to 10.

6. A nematic, liquid crystal composition comprising at least one nematic, liquid crystal compound and a compound of claim 1.

9. 5-cyano-2-(4-hexyloxycarbonyloxy phenyl) pyrimidine.

4,358,394

PROCESS FOR PREPARING WHOLE BLOOD REFERENCE CONTROLS HAVING LONG TERM STABILITY

Harold R. Crews, Miami; David L. Chastain, Jr., Fort Lauderdale, and Stephen L. Ledis, Hialeah, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Division of Ser. No. 36,794, May 7, 1979, Pat. No. 4,299,726. This application Aug. 12, 1981, Ser. No. 292,091

Int. Cl.³ G01N *33/48;* C09K *3/00*

U.S. Cl. 252—408 **10 Claims**

1. A process for preparing a whole blood reference control having long term stability for devices using electronic means for whole blood determinations, which comprises the steps of:

a. removing the plasma from whole blood to obtain packed red blood cells;

b. diluting said packed red blood cells in a preconditioning diluent which includes lactose and a non-ionic surfactant for enhancing the separation of step (d);

c. allowing the dilution of step (b) to stand for a preconditioning period of time and temperature which yields a preconditioning to the red blood cells equivalent to the combination of approximately two days at 22° C. to 27° C. for attaining desired red blood cell volume and size distribution width;

d. separating the preconditioned red blood cells from the dilution of step (c); and

e. adding a sufficient amount of the preconditioned red blood cells of step (d) to a media which is an aqueous solution of lactose, compatible bacteriostatic and fungicidal agents, albumen and at least one ingredient selected from the following groups:

(A) Bile salts and cholic acid derivatives; and

(B) Phenothiazine compounds having antihistamine properties,

said media being osmotically balanced at a preselected and controlled pH, in a total amount sufficient to act as a cell membrane stabilizer, but insufficient to cause lysing of said red blood cells.

4,358,395

HYDROGEN REGENERATION OF COKE-SELECTIVATED CRYSTALLINE ALUMINOSILICATE CATALYST

Werner O. Haag, Lawrenceville; David H. Olson, Pennington, and Paul G. Rodewald, Rocky Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

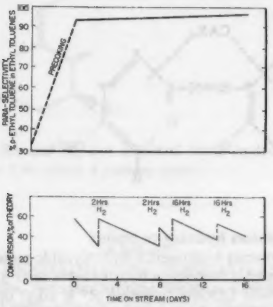
Filed Sep. 11, 1978, Ser. No. 941,606

Int. Cl.³ B01J *29/38;* C07C *1/24, 2/66, 5/22*

U.S. Cl. 252—411 R **9 Claims**

1. A process for catalytically converting lower monohydric alcohols and corresponding ethers by contacting the same, under catalytic conditions, with a catalyst comprising a crystalline aluminosilicate zeolite characterized by a silica to alumina mole ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, which catalyst has undergone controlled precoking by contact with a thermally decomposable organic compound at a temperature in excess of the decomposition temperature of said compound but less than

about 1200° F. at a hydrogen to organic compound mole ratio of between 0 and 1 to deposit at least about 1 weight percent of coke thereon and using the thus precoked catalyst in conversion of said lower monohydric alcohols and corresponding ethers to a hydrocarbon product rich in olefins under conditions of lesser severity which include at least one variable of a lower temperature or a higher hydrogen concentration than employed during the aforesaid precoking with consequent deposition of carbonaceous deposit and loss in conversion activity of said catalyst and thereafter effecting regeneration of



the aged catalyst by exposure to an atmosphere comprising hydrogen at a temperature between about 800° F. and about 1200° F. and a pressure between about 0 and about 2000 psig for a period of time sufficient to substantially restore the activity of the catalyst.

2. The method of claim 1 wherein said crystalline aluminosilicate zeolite is ZSM-5.

3. The method of claim 1 wherein the regeneration conditions include a temperature between about 900° and about 1100° F. and a pressure between about 100 and about 1000 psig.

4,358,396

PARTICULATE CATALYST AND PREPARATION

Philip Bernstein, Glen Ridge, N.J.; James P. Coffey; Alan E. Varker, both of Warwick, N.Y.; John T. Arms, Monroe, N.Y.; William D. K. Clark, Warwick, N.Y., and Paul D. Goodell, Ridgewood, N.J., assignors to MPD Technology Corporation, Wyckoff, N.J.

Filed Jan. 19, 1981, Ser. No. 226,456

Int. Cl.³ B01J *31/02*

U.S. Cl. 252—430 **21 Claims**

1. A particulate catalyst composition comprising a catalyst material encradled throughout a porous, fiber-containing polymeric material, said catalyst composition comprising, by weight, at least 50% to about 75% catalyst material, about 1% to about 5% fibrillated first polymer and the balance a support-contributing second polymer, and having porosity therethrough, said first polymer being a halogenated polyolefin, said composition being developed from a mixture of a catalyst material, a fibrillatable first polymer, a support-contributing second polymer and a major amount of a removable pore-former, said porosity being developed on removal of the pore-former from said mixture.

4,358,397

ZEOLITE CATALYSTS MODIFIED WITH GROUP IV A METALS

Chin C. Chu, North Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 201,683, Oct. 29, 1980, Pat. No. 4,302,620. This application Dec. 31, 1980, Ser. No. 221,602

Int. Cl.³ B01J *27/18*

U.S. Cl. 252—437 **10 Claims**

1. A catalyst composition comprising:

a crystalline zeolite material characterized by a constraint index of within the approximate range of 1 to 12 and a silica to alumina mole ratio of at least 12;

said zeolite further comprising at least 0.25 weight percent of one or more Group IVA metals incorporated into said zeolite in the form of a Group IVA metal oxide and at least 0.25 weight percent of phosphorus incorporated into said zeolite in the form of an oxide of phosphorus.

4,358,398

HYDRODESULFURIZATION AND HYDRODENITROGENATION CATALYSTS OBTAINED FROM COAL MINERAL MATTER

Kindtoken H. D. Liu, Newark, Del., and Charles E. Hamrin, Jr., Lexington, Ky., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 26, 1981, Ser. No. 247,708

Int. Cl.³ B01J *27/02*

U.S. Cl. 252—440 **7 Claims**

1. A process for preparing a hydrotreating catalyst from mineral matter of low-temperature ash from coal of relatively low bassanite content comprising the steps of

(a) depositing on the low-temperature ash 0.25–3 grams of an iron or nickel salt in water per gram of mineral matter and drying a resulting slurry,

(b) crushing and sizing a resulting solid, and,

(c) heating the thus-sized solid powder in hydrogen at a temperature in the range of 573–873 K. for a duration up to 200 hours.

4,358,399

ACTIVATED MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 82,436, Oct. 5, 1979, Pat. No. 4,268,377, which is a continuation-in-part of Ser. No. 848,699, Nov. 4, 1977, Pat. No. 4,183,804. This application Mar. 23, 1981, Ser. No. 246,828

The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

Int. Cl.³ B01J *27/08, 27/10, 23/46*

U.S. Cl. 252—441 **16 Claims**

1. A catalytic composite comprising the pyrolyzed reaction product of a catalytically effective amount of a ruthenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state during the incorporation and pyrolysis of the ruthenium carbonyl component, and of a rhenium component.

4,358,400

RESIDUAL OIL PROCESSING CATALYSTS

Donald S. Santilli, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 12, 1981, Ser. No. 224,712

Int. Cl.³ B01J *20/12, 21/16*

U.S. Cl. 252—455 R **4 Claims**

1. A porous composition of matter comprising:

dispersed rods of halloysite, and 0–15 percent by weight of a binder oxide, based on the total weight of said halloysite and binder oxide having a pore volume of at least 0.35 cc/gm of which at least 70 percent of the pore volume is present as pores having a diameter of between 200–700 Angstroms and at least 70 percent of said pores have a diameter of 300–700 Angstroms.

2. The composition of claim 1 further comprising a catalytic transition metal.

4,358,401

LIQUID EMULSION SCINTILLATORS WHICH SOLIDIFY FOR FACILE DISPOSAL

Robert E. O'Brien, Belmont, and Jeanne K. Krieger, Lexington, both of Mass., assignors to New England Nuclear Corporation, Boston, Mass.

Filed Mar. 31, 1980, Ser. No. 135,763
Int. Cl.³ G21F 9/16, 9/14
U.S. Cl. 252—628 21 Claims

1. A method of disposing of used liquid organic scintillation cocktail containing a polymerizable organic scintillation solvent comprising polymerizing the scintillation solvent of said cocktail.

4,358,402

CHLORINATED POLYMERS

John C. Padget, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 1, 1976, Ser. No. 737,273
Claims priority, application United Kingdom, Nov. 27, 1975, 48782/75; Jul. 27, 1976, 31238/76; Aug. 27, 1976, 35735/76
Int. Cl.³ C08L 15/02
U.S. Cl. 525—192 14 Claims

1. In a process for the preparation of a chlorinated polymer product, wherein a solution obtained by chlorination of an aliphatic polymer in a chlorine-resistant solvent is treated with steam or hot water, thereby separating a chlorinated polymer product in solid form, the improvement which comprises carrying out the treatment with steam or hot water in the presence in the said solution of a minor proportion by weight, based on the total weight of chlorinated polymers in the solution, of a separately prepared added chlorinated polymer which has a second-order transition temperature at least 20° C. below that of the chlorinated polymer product which would be obtained in the absence thereof and which is compatible with the said product in the proportions employed, said added chlorinated polymer having a chlorine content of at least 30% by weight.

4,358,403

AQUEOUS LOW-EMULSIFIER DISPERSIONS OF BUTADIENE-STYRENE EMULSION COPOLYMERS CONTAINING CARBOXYL GROUPS

Dieter Distler, Mutterstadt, and Michael Melan, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 12, 1981, Ser. No. 292,223
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1980, 3033121
Int. Cl.³ C08L 9/08
U.S. Cl. 524—745 2 Claims

1. An aqueous dispersion of an emulsion copolymer of
(a) from 35 to 55% by weight of butadiene,
(b) from 35 to 60% by weight of styrene,
(c) from 1 to 3% by weight of α,β-monoolefinically unsaturated monocarboxylic acids and/or dicarboxylic acids of 3 to 6 carbon atoms,
(d) from 1 to 3% by weight of amides of α,β-monoolefinically unsaturated monocarboxylic acids and/or dicarboxylic acids of 3 to 5 carbon atoms,
(e) from 1 to 4% by weight of N-methylolamides of α,β-monoolefinically unsaturated monocarboxylic acids and/or dicarboxylic acids of 3 to 5 carbon atoms, or their alkyl ethers, and
(f) from 1 to 3% by weight of acrylic acid and/or methacrylic acid monoesters of alkanediols of 2 to 6 carbon atoms,

the emulsion containing, as emulsifier, from 0.1 to 0.8% by weight, based on emulsion copolymers, of fatty alcohol-sulfonates and/or alkylbenzenesulfonates, where alkyl is of 12 to 16 carbon atoms.

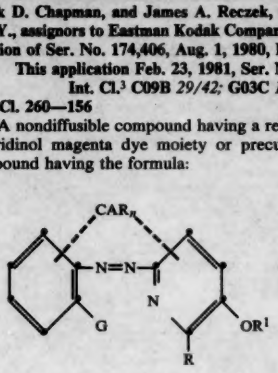
4,358,404

NONDIFFUSIBLE 6-ARYLAZO-3-PYRIDINOL

Derek D. Chapman, and James A. Reczek, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 174,406, Aug. 1, 1980, Pat. No. 4,287,292.
This application Feb. 23, 1981, Ser. No. 237,170
Int. Cl.³ C09B 29/42; G03C 1/40
U.S. Cl. 260—156 16 Claims

1. A nondiffusible compound having a releasable 6-arylazo-3-pyridinol magenta dye moiety or precursor thereof, said compound having the formula:



wherein:
(a) R represents hydroxy or amino;
(b) R^1 represents hydrogen, a hydrolyzable moiety or CAR;
(c) G represents carboxy; a hydrolyzable ester group having the formula $COOR^2$, wherein R^2 is alkyl or substituted alkyl having 1 to about 8 carbon atoms or aryl or substituted aryl having 6 to about 10 carbon atoms; or sulfamoyl having the formula SO_2NHR^3 wherein R^3 represents hydrogen, alkyl or substituted alkyl having 1 to about 8 carbon atoms, aryl or substituted aryl having 6 to about 10 carbon atoms, or carbacyl having 1 to about 8 carbon atoms;
(d) CAR represents a ballasted carrier moiety capable of releasing said diffusible 6-arylazo-3-pyridinol magenta dye moiety or precursor thereof under alkaline conditions; and
(e) n is 0, 1 or 2, with the proviso that when n is 0, then R^1 is CAR;

and wherein the phenyl ring illustrated above is not substituted with a nitro group.

4,358,405

PROCESS FOR THE PREPARATION OF ETHYLENIMINE

William V. Hayes, Clute, and David L. Childress, Angleton, both of Tex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 169,563, Jul. 17, 1980, Pat. No. 4,289,656.
This application Mar. 25, 1981, Ser. No. 247,480
Int. Cl.³ C07D 203/02
U.S. Cl. 260—239 E 4 Claims

1. A process for making an ethylenimine by the vapor phase dehydration of an ethanolamine over a catalyst which comprises the oxides of niobium or tantalum and iron and chromium wherein the atomic ratio of the metals is:

$$M_{10}\,Fe_{0.5\text{-}2.9}\,Cr_{0.3\text{-}1.7}$$

wherein M is tantalum or niobium.

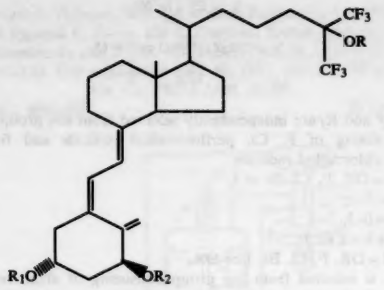
4,358,406

26,26,26,27,27,27-HEXAFLUORO-1α,25-DIHYDROXY-CHOLECALCIFEROL AND PROCESS FOR PREPARING SAME

Hector F. DeLuca; Yoko Tanaka, both of Madison, Wis.; Nobuo Ikekawa, Musashinoshi, and Yoshiro Kobayashi, Tokyo, both of Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jul. 27, 1981, Ser. No. 286,790
Int. Cl.³ C07J 17/00; C07C 35/21, 69/013
U.S. Cl. 260—239.55 R 9 Claims

1. Compounds having the formula



wherein R R_1 and R_2 are selected from hydrogen or acyl having from 1 to about 4 carbon atoms.

4,358,407

BENZOTHIAZINE DERIVATIVES

Tetsuo Yokobe, Nakatsu; Mitsuru Masago, Kashihara; Yasuaki Chihara, Yoshitomimachi, and Yutaka Maruyama, Nakatsu, all of Japan, assignors to Yoshitomi Pharmaceutical Industries Ltd., Japan

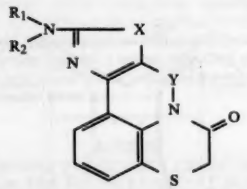
PCT No. PCT/JP80/00309, § 371 Date Aug. 24, 1981, § 102(e) Date Aug. 24, 1981, PCT Pub. No. WO81/01848, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 17, 1980, Ser. No. 295,578

Int. Cl.³ C07D *513/22, 515/22*

U.S. Cl. 260—243.3 **9 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, alkyl, alkoxycarbonyl, alkoxalyl, cycloalkyl, aralkyl and phenyl which may have 1 to 3 substituents at optional position(s) in optional combinations, each substituent being selected from the group consisting of halogen, lower alkyl and lower alkoxy, R_2 is hydrogen or alkyl, X is sulphur or oxygen, and Y is methylene or ethylene, and acid addition salts thereof.

4,358,408

PROPANE-1,2-DIONEDIOXIMES, PESTICIDES CONTAINING THESE COMPOUNDS, AND THE METHOD FOR THEIR PREPARATION

Hans R. Krüger, and Hartmut Joppien, both of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 793,577, May 4, 1977, abandoned. This application May 15, 1980, Ser. No. 150,172

Claims priority, application Fed. Rep. of Germany, May 10, 1976, 2621102

Int. Cl.³ C07C *131/00*

U.S. Cl. 260—453.3 **1 Claim**

1. 2-methyl-1-methylthio-O-methylcarbamoyl-O'-methylcarbonylglyoxime.

4,358,409

PREPARATION OF STYRYL CYCLOPROPANE INSECTICIDE INTERMEDIATES

Hellmut Hoffmann; Fritz Maurer, both of Wuppertal; Uwe Priesnitz, Unna-Massen, and Hans-Jochem Riebel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

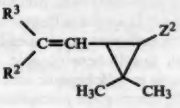
Filed Apr. 16, 1980, Ser. No. 140,644

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917620; Jul. 21, 1979, 2929636

Int. Cl.³ C07C *120/00, 121/48, 69/743, 69/616*

U.S. Cl. 260—465 G **8 Claims**

1. A process for the preparation of an alkene of the formula



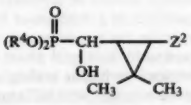
in which

R^2 represents hydrogen or halogen,

R^3 represents halogen, cyano, an alkyl, alkenyl, alkynyl, cycloalkyl, aralkenyl, aryl, alkylcarbonyl, arylcarbonyl, alkoxycarbonyl or aminocarbonyl radical or phenyl which carries one or more substituents selected from halogen, C_1–C_4-alkyl, C_1–C_2-halogenoalkyl, C_1–C_4-alkoxy, C_1–C_2-halogenoalkoxy, C_1–C_4-alkylthio and C_1–C_2-halogenoalkylthio, and

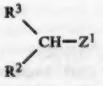
Z^2 represents cyano, carbamoyl, acetyl or C_1–C_4-alkoxycarbonyl,

comprising reacting an α-hydroxy-phosphonic acid ester of the formula



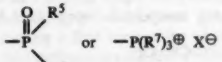
in which

R^4 each independently represents alkyl or phenyl, or the two radicals R^4 together represent alkylene, with a phosphorus-containing olefinating agent of the formula



in which

Z^1 represents a phosphorus-containing radical



wherein

R^5 and R^6 are identical or different and individually represent alkyl, phenyl, alkoxy or phenoxy or R^5 and R^6 together represent alkanedioxy,

R^7 represents alkyl or phenyl and

X represents halogen, in the presence of a base at a temperature between about −70° and +150° C., the reaction being effected in a water-free inert solvent or in a two-phase medium comprising an aqueous phase and a water-immiscible organic solvent.

4,358,410
PROCESS FOR THE PREPARATION OF META SULFOBENZOIC ACID AND META HYDROXYBENZOIC ACID THEREFROM

Walter R. Demler, and David M. Todoroff, both of Hamburg, N.Y., assignors to Buffalo Color Corporation, West Paterson, N.J.

Filed Sep. 8, 1981, Ser. No. 299,984
Int. Cl.³ C07C *143/52, 65/03*
U.S. Cl. 260—507 R 8 Claims

1. In a process for the preparation of m-hydroxy benzoic acid by solution sulfonation of benzoic acid to form m-sulfobenzoic acid followed by fusing the m-sulfobenzoic acid salt with alkali metal hydroxide and hydrating the resulting m-hydroxy benzoic acid alkali metal salt to form m-hydroxy benzoic acid, the improvement which comprises: precipitating m-sulfobenzoic acid alkali metal salt from the sulfonation solution by treating the solution with sufficient alkali metal chloride salt to cause essentially all m-sulfobenzoic acid in the sulfonation solution to crystallize as m-sulfobenzoic acid salt at a temperature below about 12° C.; filtering the precipitate from the solution to form a wet cake; and rinsing the wet cake at least once with a cold rinse solution containing from 3–10 percent of an alkali metal chloride salt, from about 100 to about 1000 milliliters of said alkali metal chloride salt solution being used per kilogram of m-sulfobenzoic acid alkali metal salt in said wet cake.

4,358,411
PREPARATION OF CARBONYLATION PRODUCTS

Richard V. Porcelli, Yonkers, and Vijay S. Bhise, New York, both of N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,610
Int. Cl.³ C07C *51/12*
U.S. Cl. 260—546 3 Claims

1. In the carbonylation of methyl acetate or dimethyl ether in a carbonylation zone in the presence of a rhodium or iridium catalyst to produce acetic anhydride, the improvement which comprises carrying out the reaction in the liquid phase under temperature and pressure conditions such that boiling conditions are maintained and the entire reaction zone effluent from the carbonylation zone is in vapor form but the catalyst remains in the carbonylation zone, cooling the vaporous effluent to condense condensible components therefrom, recycling at least some of the non-condensible components, and separating the condensible components to recover product acetic anhydride therefrom.

4,358,412
PREPARATION OF VINYL ETHERS

Bobby R. Ezzell, Lake Jackson; William P. Carl, Angleton, and William A. Mod, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 11, 1980, Ser. No. 158,427
Int. Cl.³ C07F *9/113;* C07C *69/73, 143/70*
U.S. Cl. 260—968 11 Claims

1. A method of preparing compounds represented by the general formula:

$$Y(CFR_f)_a—(CFR'_f)_b—O—CF=CF_2$$

which comprises decarboxylating

$$Y(CFR_f)_a—(CFR'_f)_b—O—\underset{\displaystyle CF_2X}{\overset{\displaystyle M}{\underset{|}{\overset{|}{CF}}}}—C=O$$

in the presence of an activator when M=OR, F, Cl, Br or I and at a temperature of from about 50° C. to about 600° C. for a time sufficient for said decarboxylation to occur where:

X = Cl, I or Br;

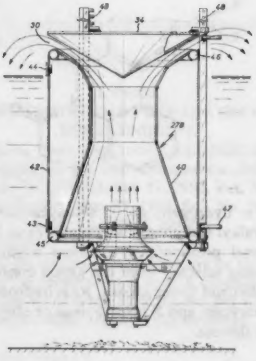
$$Y = SO_2Z,\ \underset{\displaystyle (Z)_2}{\overset{\displaystyle P=O}{|}}\ \text{or}\ \underset{\displaystyle Z}{\overset{\displaystyle C=O}{|}};$$

R_f and R'_f are independently selected from the group consisting of F, Cl, perfluoroalkyl radicals and fluorochloroalkyl radicals;
Z=OR, F, Cl, Br or I;
a=0–3;
b=0–3;
a+b=2 or 3;
M=OR, F, Cl, Br, I or OA;
A is selected from the group consisting of alkali metals, alkali earth metals, quaternary nitrogen and hydrogen; and
R=an alkyl containing one or more carbon atoms or an aryl.

4,358,413
DEVICE FOR DISPERSING A LIQUID IN A GAS PHASE

Christian Brucker, 78490 Vicq, France

Filed Jan. 23, 1981, Ser. No. 227,652
Claims priority, application France, Feb. 1, 1980, 80 02224
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—36 R 11 Claims

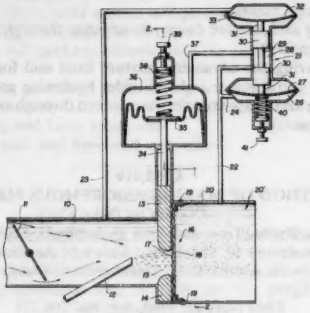


1. A device for dispersing liquid from a bed or tank into a gas phase with which the liquid defines a liquid-gas interface, said device comprising a primary flared suction tube for liquid intake, said tube tapering in the direction of the flow of liquid therethrough, a pump submergible in the liquid in the bed or tank at the level of, and enclosed by, said flared suction tube, motor means directly connected to said pump for driving said pump, a delivery nozzle located near the gas-liquid interface having a flared outer surface constituted by a surface of revolution, and duct means for carrying liquid to be dispersed interconnecting said primary suction tube and said delivery nozzle, said duct means being of a height selected as a function of the depth of liquid in the bed or tank for locating said primary suction tube near the bottom of the bed or tank and thereby adapting said device to tank or beds of different depths.

4,358,414
FUEL DELIVERY SYSTEM FOR COMBUSTION DEVICES

Sherwood F. Webster, 7832 Via Marina, Scottsdale, Ariz. 85258, and Richard L. Heise, 133 E. Garfield, Tempe, Ariz. 85281

Continuation-in-part of Ser. No. 98,033, Nov. 28, 1979, Pat. No. 4,285,320. This application May 14, 1981, Ser. No. 263,696
Int. Cl.³ F02M *1/08, 29/00*
U.S. Cl. 261—53 **10 Claims**

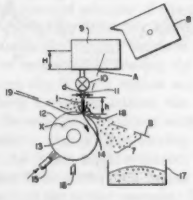


1. A fuel delivery system for combustion devices comprising means to deliver air and liquid fuel in one direction including a confining passage, an adjustable valve means across the confining passage, a dual atomizing screen assembly close to the downstream side of the valve means including a comparatively coarse mesh upstream screen element and a finer mesh downstream screen element, the two screen elements lying in contact with each other substantially, a plenum for the atomized homogeneous fuel charge immediately downstream from the dual atomizing screen assembly and being considerably larger in cross sectional size than the confining passage, and a pressure regulator means controlling opening and closing movement of said valve means to maintain a constant velocity of air and liquid fuel through an adjustable throat of the valve means, the pressure regulator means including parts in communication with said plenum and confining passage to constantly sense the pressures therein.

4,358,415
METHOD FOR PRODUCING GRANULES FROM MOLTEN METALLURGICAL SLAGS

Kazuo Tachimoto, Tokyo, and Toyosuke Tanoue, Toyonaka, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo and Sumitomo Metal Industries, Ltd., Osaka, both of, Japan

Continuation of Ser. No. 2,099, Jan. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 828,856, Aug. 29, 1977, abandoned. This application Feb. 18, 1981, Ser. No. 236,201
Int. Cl.³ B01J *2/02*
U.S. Cl. 264—8 **4 Claims**



1. A method for producing granules from molten metallurgical slag, comprising:

a. directing, from a container, a stream of said molten slag to impinge upon a cooled, non-wetting target surface having a high degree of smoothness, to cause the stream to strike and rebound from the point of impingement on the target surface as an expanding film in the form of an inverted cone with the apex at the point of impingement, wherein the cone is formed from degenerating expanding flying rings of slag from which droplets are subsequently formed and projected along the cone form,

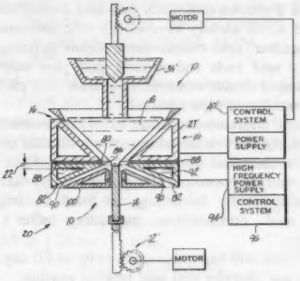
b. cooling and solidifying the droplets of slag to form the granules by the flight of said droplets through surrounding cooling air, and

c. collecting the granules in a receptor.

4,358,416
APPARATUS AND PROCESS FOR COOLING AND SOLIDIFYING MOLTEN MATERIAL BEING ELECTROMAGNETICALLY CAST

John C. Yarwood, Madison; Michael J. Pryor, Woodbridge, and Derek E. Tyler, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 4, 1980, Ser. No. 213,126
Int. Cl.³ B22D *27/02, 27/04*
U.S. Cl. 264—22 **36 Claims**



1. In an apparatus for electromagnetically casting molten material into a desired shape comprising:

means establishing a containment zone, said containment zone having a first section for electromagnetically containing said molten material and a second section downstream and communicating with said first section for forming said molten material into said desired shape, the improvement comprising:

heat extraction means provided downstream and adjacent said second section for directing a cooling medium into said containment zone whereby said cooling medium passes said molten material in said second section to rapidly solidify said molten material prior to passing said molten material in said first section to lower the temperature in said contained molten material to minimize superheating.

22. The process of electromagnetically casting molten material into a desired shape comprising the steps of:

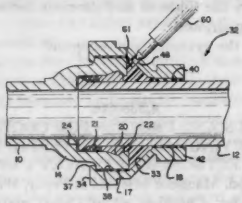
establishing a containment zone, said containment zone having a first section for electromagnetically containing said molten material and a second section downstream and communicating with said first section for forming said molten material into said desired shape, the improvement comprising:

directing a cooling medium into the downstream end of said containment zone whereby said cooling medium passes said molten material in said second section to rapidly solidify the molten material prior to passing said molten material in said first section to lower the temperature in said contained molten material to minimize superheating of said contained molten material.

4,358,417
METHOD FOR REPAIRING A PIPE COUPLING

Ernest L. Beinhauer, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 22, 1981, Ser. No. 266,398
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—36 **5 Claims**

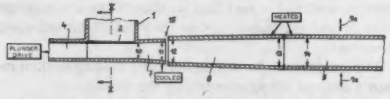


1. A method for repairing a leaking portion of a pipe member which comprises the following steps:
providing containment means around said leaking portion of said pipe member, said containment means having a first end and a second end, each said end having an aperture profiled to fit closely around the circumference of said pipe member, said containment means defining a cavity between said ends and around said pipe member, said containment means comprising at least two pieces assembled around said pipe member,
securing said containment means to said pipe member so that said leaking portion communicates with said cavity,
injecting a chemical composition in fluid form into said cavity, said composition filling said cavity, said composition subsequently hardening to form an impermeable solid, said composition expanding after injection, whereby,
said composition will expand in said cavity to fill any irregularities therein and thereby seal said leaking portion.

4,358,418
METHOD AND APPARATUS FOR MAKING COMPRESSED COMPOSITE BODIES OF PLANT PARTICLES AND BINDER

Anton Heggenstaller, Mühlenstr. 9, 8891 Unternernbach, Fed. Rep. of Germany

Filed Aug. 7, 1980, Ser. No. 176,004
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932406
Int. Cl.³ B29J *5/00*; B29F *3/014*; B29G *2/00*
U.S. Cl. 264—108 **12 Claims**



4. An apparatus for the extrusion pressing of a mixture of elongated swellable plant particles and a binder, comprising:
an elongated filling chamber terminating in a progressively widening forming passage provided with cooling means;
a plunger reciprocable in said chamber adapted to displace said mixture toward said forming passage and compact said mixture;
loading means for feeding said mixture to said chamber; and
a heated hardening passage with an inlet end slightly spaced from a discharge end of said forming passage for shaping the compacted mixture into a finished body, said inlet end having a cross section larger than that of said discharge end but smaller than that of an outlet end of said hardening passage remote from said forming passage.

10. A method of pressing a mixture of elongated swellable plant particles and a binder, comprising the steps of:
feeding said mixture into a chamber which terminates in a progressively widening forming passage having generally the profile of an elongated body to be produced;
reciprocating a piston in said chamber, with a stroke whose length is of the order of magnitude of the length of said forming passage, to advance said mixture through said forming passage;
cooling said mixture during its advance through said forming passage;
transferring the advancing mixture from said forming passage into a longer and still wider hardening passage; and
heating said mixture during its advance through said hardening passage.

4,358,419
METHOD OF MAKING AMORPHOUS METAL COMPOSITES

Martin A. Byrne, Troy, and John H. Lupinski, Scotia, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

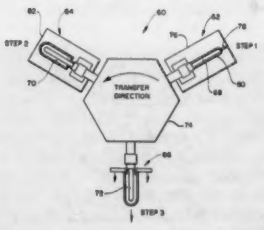
Filed Nov. 12, 1980, Ser. No. 206,221
Int. Cl.³ D04H *1/20*
U.S. Cl. 264—111 **15 Claims**

1. A process for manufacturing a rigid amorphous metal composite consisting essentially of:
(a) selecting a thermosetting polymer binder powder having a molecular weight between about 1000 to 5000 and an amorphous metal in particulate form,
(b) placing said thermosetting polymer binder powder and said amorphous metal in particulate form into a container,
(c) agitating said binder and metal to form a mixture,
(d) transferring said mixture from said container to a mold,
(e) applying heat and pressure to said mixture in said mold in an amount sufficient to convert said mixture to an amorphous rigid metal composite,
(f) removing said heat and pressure to enable said rigid composite to return to ambient conditions, and
(g) removing said rigid composite from said mold.

4,358,420
METHOD OF MAKING A THIN WALL CENTRIFUGE TUBE WITH IMPROVED POLYMER PROPERTIES

Steven T. Nielsen, Sunnyvale, and Robert S. Carey, Portola Valley, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 93,330, Nov. 13, 1979, abandoned. This application May 26, 1981, Ser. No. 267,188
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—538 **1 Claim**



1. A method for making a thin wall centrifuge tube capable of withstanding the extreme stresses associated with use in an ultracentrifuge, said method comprising the steps of:
positioning a core pin having a diameter of less than 0.188

inches and a length of diameter ratio greater than thirteen to one at a preform mold station;
placing a preform mold around a central core pin to establish a preform cavity;
injecting a thermoplastic material into said preform cavity to make a molten preform having a thickness of less than 0.080 inches;
heating said preform mold and said core pin to maintain said preform mold in a molten state;
removing said preform mold;
placing a blow mold around said preform and said core pin;
introducing air within said preform;
blowing said preform material into the cavity of said blow mold;
creating a centrifuge tube having a uniform thickness of approximately 0.010 inches to 0.025 inches;
removing said blow mold; and
ejecting said tube from said core pin.

4,358,421

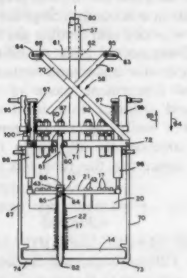
INDUSTRIAL TECHNIQUE

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 845,767, Oct. 26, 1977, Pat. No. 4,208,248. This application Dec. 28, 1979, Ser. No. 107,959

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—271 **1 Claim**



1. In combination with a fuel assembly for a nuclear reactor having a plurality of parallel fuel rods and at least one control rod guide tube maintained in a transversely spaced relationship by means of grid structures through which the fuel rods and guide tube extend, end fittings and a grill engaging the guide tube, and a hollow cylindrical sleeve, operatively connected to an end of the guide tube in axial alignment therewith, having an end portion extending beyond the grill, the cellular grill and a cellular spider assembly, each extending transversely of the sleeve, in longitudinally spaced relationship, bearing means, fixedly positioned on the sleeve, upon which the grill bears for transferring loads between the grill and the sleeve, releasable lock means, disposed superjacent to the spider assembly, selectively engaged with the end portion of the sleeve for restricting movement of the spider assembly beyond the sleeve end portion, spring means, interposed between the grill and the spider assembly, for respectively biasing the grill and the spider assembly against the bearing means and lock means, the lock means including a cellular lattice, the lattice sides of at least one of the cells engaging adjacent surfaces of the sleeve end portion, the sleeve end portion having a circumferential groove formed in the outer surface thereof for receiving the adjacent lattice sides to lock the lock means to the sleeve, the lattice sides disposed on the spider assembly for radial displacement relative to the sleeve between a locking position and a disengaged position so as to permit movement of the lock means, spider assembly, spring means and grill, as a unit, relative to the sleeve; a grapple for manipulating the grill comprising: a longitudinally member; a transversely disposed crosspiece coupled to said member for movement therewith in a longitudinal direction; a transversely disposed linkage secured to said crosspiece; said linkage having transversely oriented slots formed therein; two jaws each slidably pinned to a respective one of said transversely oriented linkage slots; a tool frame transversely disposed relative to said member; said jaws being pivotally connected to said tool frame; clamps each formed on a respective one of said jaws to selectively grasp the fuel assembly fitting, said clamps on said jaws swinging into engagement with the grill as said member, crosspiece and linkage are moved in a longitudinal direction; a plurality of longitudinally aligned tools secured to said frame for selectively radially displacing the lattice sides between the locked position and the disengaged position for selectively releasing the control rod guide tubes from the grill; and, each of said tools including a fin having at least one sloped portion to urge the lattice side to the disengaged position and further having a shoulder to engage the end portion of the sleeve to ensure alignment of the sloped portion with the lattice sides.

4,358,422

LOW TIN JEWEL METAL ALLOY

Ian M. Shaw, Wayne, and William R. Stack, Mahwah, both of N.J., assignors to ASARCO Incorporated, New York, N.Y.

Filed May 1, 1981, Ser. No. 259,409

Int. Cl.³ C22C *12/00, 30/04*

U.S. Cl. 420—577 **10 Claims**

1. A jewel metal alloy having excellent casting characteristics, low liquidus and solidus temperatures and minimal gas porosity comprising:
a bismuth-lead based alloy with a bismuth-lead ratio of about 1.3 to 1.0 having about 45.0–55.0 wt. % bismuth and about 34.5–42.5 wt. % lead;
about 1.0 to 15.0 wt. % tin;
about 1.5 to 5.0 wt. % antimony;
about 0.05 to 1.00 wt. % zinc.

4,358,423

METHOD AND APPARATUS FOR MONITORING AND CONTROLLING THE CHARGING OPERATION OF AN ELONGATED MEASURING CHAMBER

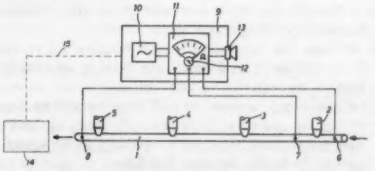
Walter Nedetzky, Graz, Austria, assignor to AVL AG, Schaffhausen, Switzerland

Continuation of Ser. No. 961,432, Nov. 16, 1978, abandoned. This application Feb. 13, 1981, Ser. No. 234,136

Claims priority, application Switzerland, Nov. 16, 1977, 14017/77

Int. Cl.³ G01N *35/00, 27/00*

U.S. Cl. 422—68 **3 Claims**



1. Apparatus for analyzing liquid specimen material, comprising wall means defining an elongated measuring chamber, means for introducing liquid specimen material into said chamber, a plurality of selective measuring electrodes extending through said wall means for contacting the specimen material and sensitive to predetermined characteristic of the specimen material for providing output measurements suitable for analysis, three spaced electrically conducting contact devices extending through said wall means for also contacting the specimen material, the first contact device being located at the input end of said chamber, the second contact device being located

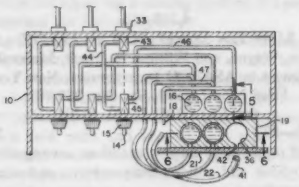
downstream of one of said electrodes and upstream of the other electrodes, and the third contact device being located at the output end of said chamber, and inluding a monitoring device connected to said three contact devices for measuring the electrical resistance through the specimen material between respective contact devices and generating corresponding signals, said means for introducing the specimen material being responsive to said signals for controlling the flow of the specimen material in said chamber.

4,358,424

EQUILIBRATING INSTRUMENT FOR PREPARING QUALITY CONTROL SOLUTIONS

Russell S. Weber, Westlake Village; Thomas H. Miller, Newbury Park, and Alfons von den Stemmen, Malibu, all of Calif., assignors to R. S. Weber, Inc., Westlake, Calif.

Filed Nov. 2, 1981, Ser. No. 317,554
Int. Cl.³ G01N *33/50, 33/96*
U.S. Cl. 422—68 **8 Claims**



1. In an equilibrating instrument for preparing quality control solutions of a liquid and gas, including a humidifier for receiving and humidifying gas, a diffusion tube, flexible tubing connecting the gas from the humidifier to the diffusion tube and a temperature controlled environment for said diffusion tube, the improvement including providing said temperature controlled environment by means of a metal heat block having a cavity open at the top for receiving said diffusion tube, the lower end of the cavity having a bottom opening of reduced diameter to define an upwardly facing annular shoulder to support said diffusion tube, and wherein said humidifier and flexible tubing are exterior of the heat block with one end of the tubing connecting to the humidifier and the other end extending to the bottom opening of said heat block to connect to said diffusion tube

whereby either or both the diffusion tube and connecting tubing can be easily separated and disposed of without affecting other components of the instrument.

4. An equilibrating instrument for preparing quality control solutions of a liquid and gas including, in combination:

(a) a housing having at least one gas inlet for connection to a source of compressed gas;

(b) at least one humidifier in said housing for receiving gas from said inlet, said humidifier having an outlet connection on the exterior of said housing;

(c) a heat block secured to said housing and having at least one elongated vertical cavity open at the top and having a decreased diameter bottom opening to define an internal upwardly facing annular shoulder;

(d) thermostatically controlled means in said housing for maintaining said heat block at a given constant temperature;

(e) a diffusion tube having an open top and terminating at its lower end in a gas inlet nipple defining an external downwardly facing annular shoulder, said tube being receivable in said cavity with its downwardly facing annular shoulder seated on said upwardly facing annular shoulder of said cavity and its nipple extending through said bottom opening to a point exterior of said housing so that said tube is supported in said cavity and yet readily manually removable out the top of said cavity;

(f) a diffuser means in the lower portion of said diffusion tube;

(g) a flexible gas conveying tubing exterior of said housing connecting said humidifier outlet to said diffusion tube nipple so that gas can be passed from said humidifier upwardly through said diffusion tube;

(h) a valve block positionable on top of said housing to overlie the upper open end of said diffusion tube, said valve block including a valve body having first, second and third ports;

(i) a sample selecting tube connecting to said third port and positioned to extend under the valve block downwardly into the open top of said diffusion tube to terminate close to said diffusion means;

(j) first and second syringes connected to said first and second ports; and

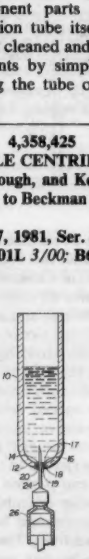
(k) a manually operable valve member extending into said valve body for connecting said first and third ports together when in a first position and connecting said second and third ports together when in a second position whereby a liquid to be equilibrated with gas can be injected into said diffusion tube by said first syringe with said valve member in said first position and gas passed into said diffusion tube and through said diffusion means to bubble up through said liquid until equilibration at said given temperature is completed and thereafter, a small "dead sample" withdrawn into said first syringe and said valve member then turned to its second position to permit withdrawal of a sample of the prepared quality control solution into said second syringe for quality control purposes, and whereby said flexible gas conveying tubing can be easily disconnected after equilibration if it should be damaged or contaminated and replaced without disassembling other component parts of the instrument and whereby said diffusion tube itself can be removed and disposed of or easily cleaned and replaced without affecting other components by simply lifting off said valve block and removing the tube out the open top of said cavity.

4,358,425

PENETRABLE CENTRIFUGE TUBE

Jack P. Finney, Hillsborough, and Kenzo Ishimaru, San Jose, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 17, 1981, Ser. No. 235,328
Int. Cl.³ B01L *3/00*; B65D *39/00*
U.S. Cl. 422—102 **1 Claim**



1. A transparent centrifuge tube for use in the cavity of the rotor of a high speed centrifuge, and having a bottom penetrable by the needle of a hypodermic syringe comprising:

a cylindrical tube open at the top and having a rounded bottom;

a passageway in the bottom of said tube;

said passageway including a recess, on the inner side of the tube;

said recess on the inner side of the tube including a shoulder having an inverted conical shape;

said passageway also including a recess on the outer side of the tube;

said recess on the outer side of the tube including a shoulder co-axial with respect to said passageway;

a resilient plug disposed in said passageway providing a tight fitting closure therefor;

said plug having a round central body;

an inverted conical flange connecting with the upper end of said round central body; and

a disc-shaped flange connecting with the lower end of said round central body.

4,358,426

METHOD FOR CLEANING SOLUTION USED IN NUCLEAR FUEL REPROCESSING

Othar K. Tallent; David J. Crouse, and James C. Mailen, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 17, 1980, Ser. No. 217,357

Int. Cl.³ C01G *43/00, 56/00, 25/00*

U.S. Cl. 423—10 **2 Claims**

1. A method for removing a complex of uranium, plutonium, or zirconium with mono-butyl phosphate or di-n-butyl phosphate degradation product of tri-n-butyl phosphate in a nuclear fuel reprocessing solution containing said complex, tri-n-butyl phosphate and a hydrocarbon diluent, comprising contacting said solution with an aqueous solution of a salt selected from the group consisting of hydrazine oxalate, hydrazine tartrate, hydrazine lactate and hydrazine glycolate, to thereby obtain (1) an organic phase which contains said tri-n-butyl phosphate and said hydrocarbon diluent and is substantially free of said complex and (2) a spent aqueous phase containing the uranium, plutonium, or zirconium of said complex with the degradation product.

4,358,427

REMOVAL OF HYDROGEN SULFIDE FROM GEOTHERMAL STEAM

Peter Urban, Northbrook, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 13, 1981, Ser. No. 321,289

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—230 **13 Claims**

1. A process for removing hydrogen sulfide from geothermal steam containing less than 1000 ppm by volume of hydrogen sulfide comprising adding at least a stoichiometric amount of free oxygen to the geothermal steam and contacting the steam at a pressure of at least 30 psig and a temperature not greater than the saturation temperature of said steam with a bed of oxidation catalyst comprising activated carbon, a refractory inorganic oxide or a metal phthalocyanine wetted with an aqueous solution of thiosulfate, sulfates, or polysulfides to convert the hydrogen sulfide and to obtain steam of reduced hydrogen sulfide content.

4,358,428

METHOD OF REMOVING NITROGEN OXIDES FROM WASTE GAS BY SELECTIVE CONTACT REDUCTION

Tadashi Fujita, and Shigeo Soejima, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 881,694, Feb. 27, 1978, abandoned, which is a continuation of Ser. No. 751,598, Dec. 17, 1976, abandoned. This application Jul. 9, 1979, Ser. No. 55,977

Claims priority, application Japan, Dec. 24, 1975, 50-154506

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—239 **1 Claim**

1. In a method of removing nitrogen oxides from dirty, dust or soot containing waste gases from stationary fossil fuel burning sources by selective catalytic reduction, comprising adding ammonia gas to said waste gas, and bringing said waste gas containing ammonia gas into contact with a ceramic honeycomb structural body having catalyst material on or in the channel walls thereof, said catalyst material comprising a metal or metal oxide effective for reducing nitrogen oxides in the presence of ammonia to nitrogen and water,

the improvement comprising passing said waste gas through said honeycomb body at a gas speed of 0.5–60 m/sec, said body having walls of substantially uniform thickness forming channels extending through said body, said channels having a hydraulic diameter of 2.0–30 mm, and said body having an open frontal area of 50–80%, said body causing a pressure drop of said waste gases passing through said body of not greater than 200 mm. of H_2O thereby attaining reduction of nitrogen oxides to nitrogen and preventing the channels from being clogged by said dust or soot.

4,358,429

OXYGEN STABILIZED ZIRCONIUM VANADIUM INTERMETALLIC COMPOUND

Marshall H. Mendelsohn, Woodridge, and Dieter M. Gruen, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 6, 1981, Ser. No. 308,966

Int. Cl.³ B01D *53/34;* **C01G** *25/02, 31/02*

U.S. Cl. 423—248 **7 Claims**

4. A method for separating hydrogen from a gaseous mixture comprising:

contacting an active form of the intermetallic compound Zr_xVO_y, where $x=0.7$ to 2.0 and $y=0.18$ to 0.33, with a gaseous mixture at a pressure of at leas 1.4 psia and a temperature of at least 25° C. whereby hydrogen in the mixture is absorbed to form a metal hydride.

4,358,430

PROCESS FOR TREATMENT OF SELENIUM-BEARING MATERIALS

Grigori S. Victorovich, Mississauga, Canada; Ramamritham Sridhar, Madras, India, and Malcolm C. E. Bell, Oakville, Canada, assignors to Inco Limited, Toronto, Canada

Continuation of Ser. No. 151,349, May 19, 1980, abandoned. This application Oct. 14, 1981, Ser. No. 311,164

Claims priority, application Canada, Jun. 14, 1979, 329749

Int. Cl.³ C01B *19/00*

U.S. Cl. 423—508 **25 Claims**

24. In a process for treating a selenium-bearing material, which may contain one or more of the values selected from tellurium, silver and nonferrous base metals such as copper, nickel, cobalt and lead, by roasting with soda ash to convert selenium values to a water soluble form, the improvement which comprises:

a. forming a slurry of the selenium-bearing material in an aqueous medium;

b. adjusting the pH of the slurry to neutralize free acid (if present), and precipitate nonferrous base metals (if present);

c. adding a sodium carbonate-containing reagent to the slurry in an amount to provide a final slurry containing sodium; selenium + tellurium (if present) in a molar ratio of about 1.8:1 to about 3:1, the water content of said final slurry being at least 30 wt. % and at least sufficient in an amount to dissolve a preponderant amount of the sodium carbonate-containing reagent;

d. continuously feeding the final slurry to a heated pelletizing means to form pellets from the slurry, said pelletizing means having a hot agitated pellet bed and said pellet bed being maintained at a temperature of between about 60° C. and 120° C., and maintaining a residence time of the pellets on the heated pelletizing means sufficient to produce a wet pellet product having a pellet size not greater than about 30 mm and having a moisture content of at least about 10% by weight; and

e. drying and then roasting the wet pellet product, the roasting being carried out in an oxygen-containing atmosphere

at a temperature of about 350° to 500° C. to convert selenium values to a water soluble form.

25. The process according to claim 24, wherein the roasted pellets are water leached to extract selenium.

4,358,431

PRODUCTION OF MAGNETIC IRON OXIDES

Horst Brunn; Peter Kiemle; Franz Hund, and Heribert Bade, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 286,134

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028679

Int. Cl.³ C01G *49/08*

U.S. Cl. 423—632 7 Claims

1. In the production of needle-shaped magnetic iron oxide pigments by treating iron with a nitro-aromatic in the presence of α-FeOOH nuclei to form α-FeOOH particles and an amino-aromatic, and thereafter dehydrating the α-FeOOH particles and reducing them, the improvement which comprises forming the α-FeOOH nuclei at about 0° to 90° C. in a suspension of metallic iron, an iron-(II)-salt and a nitro-aromatic by adding as a basic precipitant alkali or alkaline earth metal hydroxides and/or alkaline earth metal carbonates, ammonia or organic amino compounds in about 10 to 95% of the amount required for the complete precipitation of the iron in the iron-(II)-salt as $Fe(OH)_2$ or a basic Fe(II) salt.

4,358,432

MATERIAL FOR HYDROGEN ABSORPTION AND DESORPTION

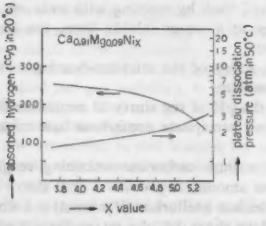
Takaharu Gamo, Fujiidera; Yoshio Moriwaki, Moriguchi, and Toshio Yamashita, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 26, 1977, Ser. No. 819,510

Claims priority, application Japan, Jul. 26, 1976, 51-89439; Aug. 5, 1976, 51-93643

Int. Cl.³ C01B *6/24*

U.S. Cl. 423—644 6 Claims



1. Material for hydrogen absorption and desorption comprising an alloy represented by the formula AB_x in which A represents an alloy consisting of calcium and magnesium, B represents a metal comprising nickel, x is a value indicating the ratio of B to A and is 3.8 to 6.3, the hydride of said alloy having a hydrogen dissociation eqilibrium pressure of less than atmospheric pressure at room temperature and of several atmospheres at 35° to 100° C., said material having a single homogeneous hexagonal structure phase of the $CaCu_5$ type in more than 95% of the alloy.

4. A method for heat storage which comprises contacting the hydride of the alloy of any one of claims 1 to 3 with a heat source.

4,358,433

HETEROGENEOUS PROCESS

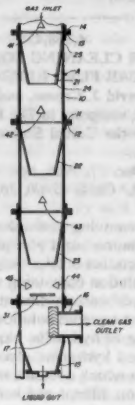
Ladislav J. Pircon, 305 Canterberry La., Oak Brook, Ill. 60521

Continuation-in-part of Ser. No. 677,750, Apr. 16, 1976, Pat. No. 4,209,502, which is a continuation-in-part of Ser. No. 467,083, May 6, 1974, Pat. No. 3,957,465. This application Oct. 27, 1977, Ser. No. 846,033

The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.

Int. Cl.³ C01B *1/00*

U.S. Cl. 423—659 13 Claims



1. A low pressure drop process having pressure drop of less than that characteristic of a process using a high turbulence reactor for inducing heterogeneous chemical and physical reactions in gas streams by cocurrent movement of said gas stream and reactant liquids or solids comprising:

passing a gas stream and solid reactant or liquid reactant into one end of a substantially liquid and gas tight casing;

passing the gas stream and solid or liquid at entry velocities under 2100 feet per minute through a continually converging nozzle symmetrical with respect to its axis within the casing and having an entry in communication with said one end of said casing, the entry of the nozzle having an effective cross-sectional area of about 2 to about 64 times the effective cross-sectional area of the outlet and the mean angle of convergence of the nozzle being about 6° to 20°, differential velocities and differential accelerations and decelerations between non-compressible liquids or solids and compressible gas substantially only along the axis of the nozzle causing at least two states of gas, solid and liquid to contact causing chemical and physical reaction of reactants in passing through the nozzle;

removing the liquid and particulate matter from the casing; and

separately removing the gas from the other end of the casing.

4,358,434

METHOD, COMPOSITION AND KIT FOR STABILIZING RADIOLABELED COMPOUNDS

Nathan R. Tzodikov, Milton, and Robert E. O'Brien, Belmont, both of Mass., assignors to New England Nuclear Corporation, Boston, Mass.

Filed Dec. 19, 1979, Ser. No. 105,272

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1 40 Claims

1. As an article of manufacture, a kit comprising at least one container of solution of a radiolabeled organic compound and a substantially insoluble resin containing a quaternary ammonium group.

4,358,435

LIGAND COMPOSITIONS AND PROCESSES FOR THEIR MANUFACTURE AND THEIR USE IN RADIOIMMUNOASSAY

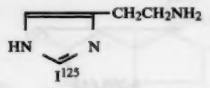
Wilson R. Slaunwhite, Jr., Snyder, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,259

Int. Cl.³ G01N *33/56, 33/60;* A61K *43/00;* C07D *211/90*

U.S. Cl. 424—1 18 Claims

1. An essentially pure composition having the formula:



4,358,436

BLOOD TYPING TESTS AND REAGENTS

Henry A. Graham, Jr.; David J. Olekna, both of Annandale; Johnna B. Hawk, Rocky Hill, and Diane B. Kebles, Stewartsville, all of N.J., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Continuation-in-part of Ser. No. 82,199, Oct. 5, 1979, Pat. No. 4,296,090, which is a continuation-in-part of Ser. No. 57,481, Jul. 13, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 155,322

The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.

Int. Cl.³ G01N *33/80*

U.S. Cl. 424—11 13 Claims

1. A method for rapidly determining the presence or absence on the red blood cells of a given individual of an antigen selected from C, c, E, e, and K which comprises the steps of:

(a) obtaining a sample of red blood cells to be tested;

(b) adding to and mixing with said sample an antibody reagent to form a mixture; and

(c) without substantial incubation observing said mixture to determine whether agglutination does or does not occur;

wherein said antibody reagent comprises reduced and S-alkylated IgG antibody to the selected antigen which in the case of anti-C has an average titer of at least 5 with dCce or DCcEe cells; in the case of anti-c has an average titer of at least 16 with dCce cells; in the case of anti-E has an average titer of at least 8 with dcEe cells; in the case of anti-e has an average titer of at least 2 with dcEe cells; and in the case of anti-K has an average titer of at least 8 for cells which are heterozygous for the K antigen.

6. An antibody reagent useful for rapidly determining the presence or absence on red blood cells of an antigen selected from the group consisting of C, c, E, e, and K which antibody reagent, in the case of anti-C has an average titer of at least 5 with dCce or DCcEe cells; in the case of anti-c has an average titer of at least 16 with dCce cells; in the case of anti-E has an average titer of at least 8 with dcEe cells; in the case of anti-e has an average titer of at least 2 with dcEe cells; and in the case of anti-K has an average titer of at least 8 for cells which are heterozygous for the K antigen which comprises reduced, S-alkylated, IgG antibody to the selected antigen maintained at a pH of between about 7.5 and 8.3 by an effective buffering amount of a compatible buffer in a medium containing from about 6–10% by weight total protein.

4,358,437

COMPOSITIONS

Susan A. Duke, Croydon, England, assignor to Beecham Group Limited, England

Continuation of Ser. No. 98,051, Nov. 28, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,360

Claims priority, application United Kingdom, Nov. 29, 1978, 48530/78

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 10 Claims

1. An anticariogenic oral hygiene composition substantially free of alumina and having improved fluoride release from monofluorophosphate, comprising a source of monofluorophosphate ions, a source of carbonate ions and a source of metasilicate ions, each source being present in an amount such that, in use, an aqueous solution containing from 3.5 to 7.0×10^{-4} mol.l^{-1} dissolved metasilicate ions, from 1 to 2×10^{-2} mol.l^{-1} dissolved monofluorophosphate ions and from 0.5×10^{-4} to 1×10^{-3} mol.l^{-1} dissolved carbonate ions is produced in the mouth.

4,358,438

NOVEL POLYVALENT VIRUS VACCINE AGAINST RABIES AND CANINE DISTEMPER

Gosse Bijlenga, La Tour de Salvagny, France, assignor to Gist-Brocades N.V., Delft, Netherlands

Division of Ser. No. 168,332, Jul. 14, 1980. This application Apr. 13, 1981, Ser. No. 253,238

Claims priority, application United Kingdom, Jul. 17, 1979, 7924916

Int. Cl.³ A61K *39/175, 39/205*

U.S. Cl. 424—89 7 Claims

1. A polyvalent virus vaccine comprising propagating first a living rabies virus and then a living canine distemper virus in a single cell substantially free from material emanating from more than one type of tissue cell used to propagate the viruses in an amount sufficient to combat rabies and canine distemper.

4,358,439

CYCLOOCTAPEPTIDES

Peter Sieber, Reinach; Bruno Kamber, Arlesheim, and Hans Rink, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

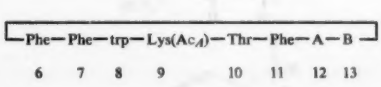
Filed Dec. 15, 1980, Ser. No. 216,353

Claims priority, application Switzerland, Dec. 21, 1979, 11409/79

Int. Cl.³ A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 7 Claims

1. A cyclic octapeptide of the formula



(I)

in which trp represent L-Trp, D-Trp or an analogous radical which carries a halogen atom in the indole nucleus, Ac_4 represents hydrogen, A represents L-Phe, D-Phe, L-Phg or D-Phg, or the analogus residues having the cyclohexyl or p-hydroxyphenyl radical substituted for the phenyl radical, and B represents Gaba which is the residue of the unsubstituted α-

aminobutyric acid, or Gaba (Ar), which is an analogus residue carrying in the β-position a mono- or bicyclic aryl radical Ar having not more than 12 carbon atoms, and also pharmacologically tolerable salts and activity-prolonging therapeutically acceptable complexes thereof.

4,358,440

POLYPEPTIDE AND ITS PRODUCTION AND USE

Masahiko Fujino, Takarazuka; Mitsuhiro Wakimasu, Suita, and Chieko Kitada, Sakai, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 21, 1981, Ser. No. 226,600

Claims priority, application Japan, Jan. 2, 1980, 55-11868

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **2 Claims**

1. The compound of the formula:

H-Tyr-Gly-Gly-Phe-Met-Lys-Pro-Tyr-Thr-Lys-Gln-Ser-His-Lys-Pro-Leu-Ile-Thr-Leu-Leu-Lys-His-Ile-Thr-Leu-Lys-Asn-Glu-Gln-OH, or a pharmaceutically acceptable salt thereof.

4,358,441

NICOTINIC DERIVATIVES OF GLUCOSAMINE AND RELATED PHARMACEUTICAL COMPOSITIONS

Walter Murmann, Arona, and Osvaldo Ponchiroli, Rho Milano, both of Italy, assignors to Laboratorio Guidotti & C. S.p.A., Pisa, Italy

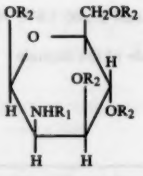
Filed May 19, 1981, Ser. No. 265,348

Claims priority, application Italy, May 20, 1980, 22188 A/80

Int. Cl.³ A61K *31/70;* **C07H** *5/06*

U.S. Cl. 424—180 **7 Claims**

1. A nicotinic derivative of glucosamine selected from the group of compounds having the formula:



(I)

wherein R_1 represents H or the radical of nicotinic acid and R_2 is the radical of nicotinic acid, and their non toxic, pharmaceutically acceptable acid salts.

5. A composition for lowering the lipid level in plasma and for preventing atheroma formation on vessel walls containing, as the active ingredient, 500 to 1000 mg of a nicotinic derivative of glucosamine according to claim 1, or a salt thereof with a non toxic and pharmaceutically acceptable acid, together with an excipient or inert carrier.

4,358,442

ROSMARINIC ACID-PHOSPHOLIPIDE-COMPLEX

Ferdinand Wirtz-Peitz, Pulheim; Manfred Probst, Frechen, and Johannes Winkelmann, Cologne, all of Fed. Rep. of Germany, assignors to Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 11, 1980, Ser. No. 215,425

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952115

Int. Cl.³ A01N *57/26;* **A61K** *31/685*

U.S. Cl. 424—199 **7 Claims**

1. Rosmarinic acid-phospholipide-complex.

4,358,443

METHOD AND COMPOSITION FOR CONTROLLING THE GROWTH OF MICROORGANISMS

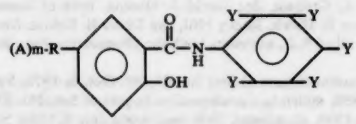
Robert A. Coburn, Williamsville; Richard T. Evans, East Amherst; Robert J. Genco, Amherst, all of N.Y., and Armando Batista, Panama, Panama, assignors to The Research Foundation of State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 140,098, Apr. 14, 1980, Pat. No. 4,287,191. This application Aug. 8, 1980, Ser. No. 176,419

Int. Cl.³ A01N *37/36;* **C07C** *103/29, 103/21*

U.S. Cl. 424—230 **27 Claims**

1. A compound having the formula:



where —R— is a saturated or unsaturated, halogenated or unhalogenated n-alkylene group containing 4 through 20 carbon atoms; A is methyl, m is 1, and Y is independently at each occurrence —H, lower alkyl, halogenated lower alkyl, $—NO_2$, —CN, —F, lower acyl, $—SO_2R''$, or $—SO_3R''$ where R'' is lower alkyl or halogenated lower alkyl, provided that at least one of Y is not H or lower alkyl, said composition having a partition coefficient greater than 4.

16. A method for inhibiting the growth of a microorganism, said method comprising contacting the microorganism for a sufficient time at a sufficient concentration of the compound of claim 1 to inhibit the growth of the microorganism.

4,358,444

2,4-DIOXACYCLOHEXANONE DERIVATIVE

Giuseppe Quadro, Milan, Italy, assignor to Dr. L. Zambeletti S.p.A., Baranzate, Italy

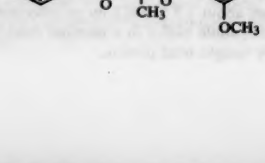
Filed Sep. 28, 1981, Ser. No. 306,183

Claims priority, application Italy, May 7, 1981, 21558 A/81

Int. Cl.³ A61K *31/60, 31/625;* **C07D** *319/08*

U.S. Cl. 424—230 **2 Claims**

1. 3-(2-Methoxy-phenoxy)-3-methyl-benzo-2,4-dioxacyclohexanone of formula



(I)

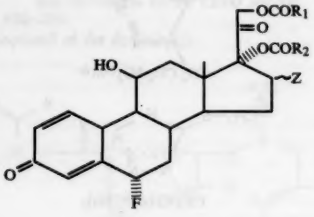
4,358,445

6α-FLUORO-PREDNISDONE 17,21 DIESTERS

Peter MacDonald, 21/35 Sempione St., Arese (Milano), Italy

Filed Nov. 17, 1980, Ser. No. 207,809
Claims priority, application Italy, Nov. 16, 1979, 27353 A/79; Oct. 9, 1980, 49853 A/80
Int. Cl.³ A61K 31/56
U.S. Cl. 424—243 4 Claims

1. A novel 6α-fluoro-prednisolone 17,21-diester of the formula I



(I)

in which the R_1 group contains 1 carbon atom and the R_2 group contains 4 carbon atoms, and wherein Z is a 16β-methyl group, whereby said diester is a 6α-fluoro-16β-methyl-prednisolone 17-valerate 21-acetate.

4. Method of treating an inflammatory condition in a warm-blooded animal responsive to treatment with anti-inflammatory agents, which comprises administering to said animal a non-toxic, anti-inflammatory effective amount of a compound as claimed in claims 1 or 2.

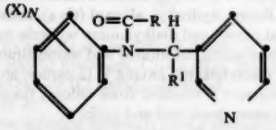
4,358,446

USE AS FUNGICIDES OF N-(3-PYRIDYLMETHYL)-N-ACYL ANILINES

Pieter Ten Haken, Eastling, Nr. Faversham, and Shirley B. Webb, Sheidwich, Nr. Faversham, both of England, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 164,975, Jul. 1, 1980, abandoned. This application Jun. 2, 1981, Ser. No. 269,173
Claims priority, application United Kingdom, Jul. 19, 1979, 7925164
Int. Cl.³ A01N 43/40, 55/02
U.S. Cl. 424—245 1 Claim

1. A method for combatting fungi at a locus which comprises applying to the locus a fungicidal amount of a compound of the formula:



wherein R is hydrogen, or is alkyl or alkoxyalkyl of from one to six carbon atoms, R^1 is hydrogen or alkyl of from one to four carbon atoms, X is halogen and n is zero, one or two, the acid addition salts thereof, N-oxides thereof and complexes thereof with halides of calcium, copper and iron.

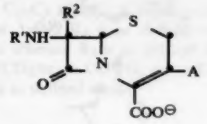
4,358,447

7-N-HETEROCYCLYL CEPHALOSPORINS

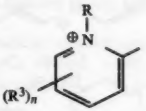
John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

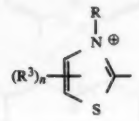
Filed Apr. 27, 1979, Ser. No. 34,035
The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.
Int. Cl.³ C07D 501/14; A61K 31/545
U.S. Cl. 424—246 5 Claims

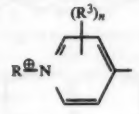
1. A compound having the structural formula:

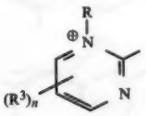


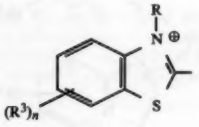
and the pharmaceutically acceptable salts thereof wherein:
R^2 is hydrogen or methoxyl;
R′ is selected from the group consisting of:

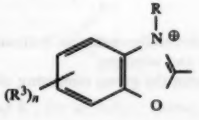


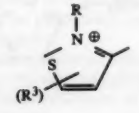












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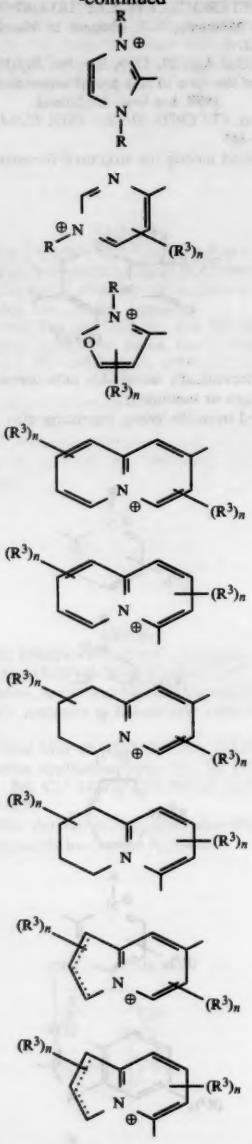
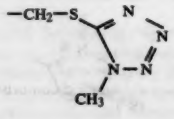


wherein the dotted line indicates both saturated and unsaturated rings; and wherein:

A is selected from the group consisting of:



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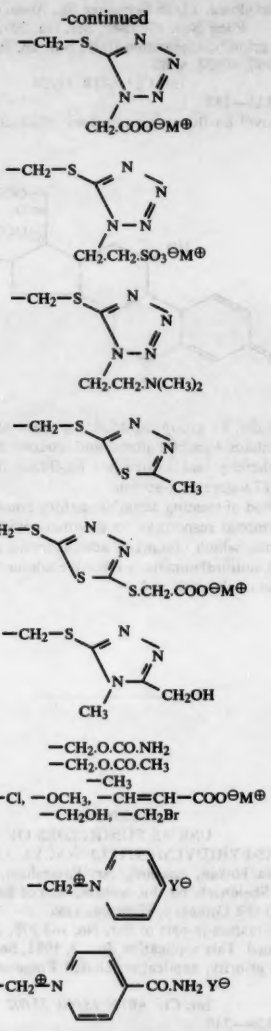


wherein Y is a pharmaceutically acceptable anion and M is a pharmaceutically acceptable cation; R is hydrogen, alkyl having from 1–6 carbon atoms, substituted alkyl having from 1–6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxyl (C_{1-6}), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1–6 carbon atoms substituted and unsubstituted phenylalkyl and phenylalkenyl having 7–12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;

R^3 is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and dialkylamino, alkoxyl, alkyl having from 1–6 carbon atoms, substituted alkyl having 1–6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxyl having 1–6 carbon atoms, phenyl and phenyloxy; and

n is an integer selected from 0 to 3.

4,358,448

N-SUBSTITUTED THIAZOLYL DERIVATIVES OF OXY-IMINO-SUBSTITUTED CEPHALOSPORINS USEFUL AS ANTI-BACTERIAL AGENTS

Ettore Perrone; Giuliano Nannini, both of Bresso; Marco Alpegiani, Caminata Val Tidone; Franco Giudici, Arese, and Giuseppe Meinardi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

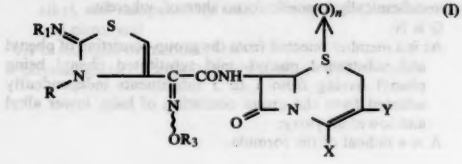
Filed Nov. 12, 1980, Ser. No. 206,078

Claims priority, application United Kingdom, Dec. 7, 1979, 7942269

Int. Cl.³ A61K *31/54*; C07D *501/00*

U.S. Cl. 424—246 11 Claims

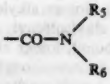
1. Compound of the formula (I)



(I)

wherein

R is (1) —OR_2 in which R_2 is a hydrogen atom or a saturated or unsaturated C_1–C_6 branched or straight chain aliphatic hydrocarbon group which is unsubstituted or substituted by a substituent selected from the group consisting (a) cyano; (b) -$COOR_4$ in which R_4 is hydrogen, or C_1–C_6 alkyl and (c)

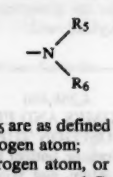


in which each of the groups R_5 and R_6, which may be the same or different, represents a hydrogen atom, a C_1–C_6 alkyl or a C_2–C_6 alkanoyl group or (2)

wherein R_5 and R_6 are as defined above;

R_1 represents a hydrogen atom;

R_3 represents a hydrogen atom, or a branched or straight chain saturated or unsaturated C_1–C_6 aliphatic hydrocarbon group, which may be unsubstituted or substituted by one or more substituents selected from (a') hydroxy; (b') cyano; (c') C_1–C_6 alkyl, (d')

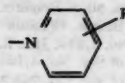


in which R_5 and R_6 are as defined above; (e') -$COOR_7$ in which R_7 may be hydrogen, C_1–C_6 alkyl, aryl, indanyl, or acetoxymethyl, or (f') halo-C_1–C_6 alkyl;

n is zero, 1 or 2;

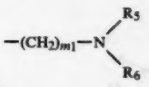
Y is hydrogen; halogen; hydroxy; C_1–C_6 alkoxy; C_1–C_6 alkyl or a group —CH_2—Z is which Z is (1)

or (2)



where R' is hydrogen, C_1–C_6 alkyl, carboxy, cyano or carbamoyl; or (3) —S—Het, wherein Het is:

(1) a tetrazolyl radical, unsubstituted or substituted by C_1–C_3 alkyl, C_2–C_4 alkenyl, $(CH_2)m_1$—$COOR_4$ wherein m_1 is 1, 2 or 3 and R_4 is as defined above, —CH=CH—$COOR_4$ wherein R_4 is as defined above, —$(CH_2)m_1$—CN; —$(CH_2)m_1$ —$CONH_2$ or —$(CH_2)m_1$ —SO_3H wherein m_1 is as defined above,

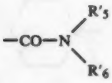


wherein m_1 is as defined above and R_5 and R_6 are as defined above;

(2) a thiadiazolyl radical, unsubstituted or substituted by C_1–C_4 alkyl, C_2–C_4 alkenyl, —SH; —SCH_3, —SCH_2COOH, —$(CH_2)_m$—COOH,

wherein each of R'5 and R'6 is hydrogen or C_1–C_3 alkyl and m is 0, 1, 2 or 3;

(3) a heterobicyclic ring selected from tetrazolopyridazinyl, tetrazolopyrazinyl, thiadiazolopyridazinyl, and triazolopyridazinyl, each optionally substituted by hydroxy, —SH,



wherein R'5 and R'6 are as defined above, —$COOR_4$ wherein R_4 is as defined above, C_1–C_3 alkyl, C_2–C_4 alkenyl, —S—CH_2COOR_4, —CH_2COOR_4, or —CH=CH—$COOR_4$, wherein R_4 is as defined above; or

wherein R'5 and R'6 are as defined above; and

X is a free carboxy group or a pharmaceutically acceptable ester thereof; and the pharmaceutically and veterinarily acceptable salts thereof.

11. A method of treating bacterial infection in a patient in need of such treatment, said method comprising administering to said patient an anti-bacterial amount of a compound of any one of claims 5 to 9 or 1 to 4.

4,358,449
1-(1,3-DIOXOLAN-2-YLMETHYL)-1H-1,2,4-TRIAZOLES AND COMPOSITIONS

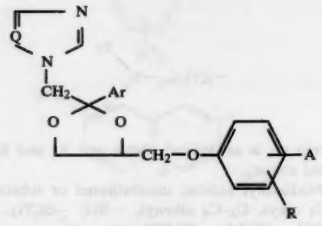
Jan Heeres, Vosselaar; Leo J. J. Backx, Arendonk, and Joseph H. Mostmans, Antwerp, all of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Continuation of Ser. No. 1,614, Jan. 8, 1979, abandoned, which is a division of Ser. No. 4,144,346, which is a continuation-in-part of Ser. No. 764,263, Jan. 31, 1977, abandoned. This application Feb. 15, 1980, Ser. No. 351,671

Int. Cl.[3] **A61K** *31/535, 31/445;* **C07D** *413/14*

U.S. Cl. 424—248.58 **7 Claims**

1. A chemical compound selected from the group consisting of an azole derivative having the formula:

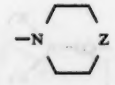


and the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:

Q is N;

Ar is a member selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl being phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl and lower alkyloxy;

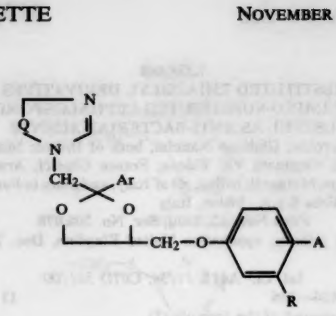
A is a radical of the formula



wherein Z is a member selected from the group consisting of a direct bond, CH_2, O and N-R_4, wherein R_4 is selected from the group consisting of hydrogen, lower alkyl, hydroxy(lower alkyl), (lower alkyloxy)lower alkyl, lower alkanoyl, lower alkylsulfonyl, phenylmethylsulfonyl, lower alkyloxycarbonyl, lower alkyloxycarbonylmethyl, phenoxycarbonyl, aminocarbonyl, mono- and di(lower alkyl)aminocarbonyl, aminocarbonylmethyl, (lower alkyl-)aminocarbonylmethyl, (lower alkyl) aminothioxomethyl, (lower alkylthio)thioxomethyl, phenyl, phenylmethyl, benzoyl and substituted benzoyl, said substituted benzoyl being benzoyl having from 1 to 2 substituents independently selected from the group consisting of halo, lower alkyl and lower alkyloxy; and

R is hydrogen.

7. A composition for combatting a microorganism selected from the group consisting of fungus and bacterium comprising an inert carrier material and as an active ingredient an effective amount of a compound selected from the group consisting of an azole derivative having the formula:



and the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:

Q is N;

Ar is a member selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl being phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl and lower alkyloxy;

A is a radical of the formula

wherein Z is a member selected from the group consisting of a direct bond, CH_2, O and N-R_4 wherein R_4 is selected from the group consisting of hydrogen, lower alkyl, hydroxy(lower alkyl), (lower alkyloxy)lower alkyl, lower alkanoyl, lower alkylsulfonyl, phenylmethylsulfonyl, lower alkyloxycarbonyl, lower alkyloxycarbonylmethyl, phenoxycarbonyl, aminocarbonyl, mono- and di(lower alkyl)aminocarbonyl, aminocarbonylmethyl, (lower alkyl-)aminocarbonylmethyl, (lower alkyl) aminothioxomethyl, (lower alkylthio) thioxomethyl, phenyl, phenylmethyl, benzoyl and substituted benzoyl, said substituted benzoyl being benzoyl having from 1 to 2 substituents independently selected from the group consisting of halo, lower alkyl and lower alkyloxy; and

R is hydrogen.

4,358,450
O-ALKYLATED OXIMES AND PHARMACEUTICAL COMPOSITION THEREOF

Ulrich Gebert; Ernold Granzer, both of Kelkheim; Heinz-Günter Greve, Frankfurt am Main, and Werner Thorwart, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

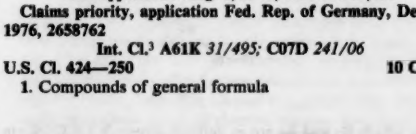
Continuation of Ser. No. 864,004, Dec. 23, 1977, abandoned. This application Aug. 6, 1979, Ser. No. 63,810

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658762

Int. Cl.[3] **A61K** *31/495;* **C07D** *241/06*

U.S. Cl. 424—250 **10 Claims**

1. Compounds of general formula



(I)

wherein R^1 is a member selected from the group consisting of (a1) an unsubstituted at most binuclear aryl group having 6 to 10 carbon atoms, and (a2) a group as in (a1) but substituted by from 1 to 3 equal or different radicals selected from the group consisting of alkyl, halogenoalkyl, alkoxy, dialkylamino each

having up to 4 carbon atoms in the alkyl moiety, halogen, phenyl, carboxyl, cyano, nitro and hydroxy groups,

(b) a 5- to 6-membered heteroaromatic ring containing one heteroatom which is selected from the group consisting of nitrogen, oxygen and sulfur atoms and such rings anellated to a benzene nucleus and the non-heteroatoms of the ring are carbon atoms; and

R^2 is a member selected from the group consisting of hydrogen, alkyl having up to 3 carbon atoms, phenyl, cycloalkyl having up to 6 carbon atoms in the ring and cycloalkyl bearing a hydrocarbon bridging radical having up to 2 carbon atoms;

R^3 is hydrogen, hydroxy, alkanoyloxy or nicotinoyloxy; and

R^4 and R^5 are the same or different and each is a member selected from the group consisting of hydrogen, halogen, alkyl, and halogenoalkyl each having up to 3 carbon atoms, and nitro; and

X is nitrogen or methine; and

physiologically acceptable acid addition salts thereof.

4,358,451

PYRIMIDO- AND IMIDAZO-PYRIDOINDOLE DERIVATIVES

Gabor I. Koletar, Berkeley Heights, N.J.; Jonathan R. Frost, Palaiseau, France; Regis DuPont, Paris, France; Patrick Lardenois, Bourg la Reine, France; Claude Morel, Massy, France, and Henry Najer, Paris, France, assignors to Synthelabo, Paris, France

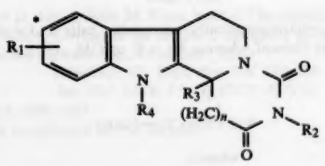
Filed Jan. 15, 1980, Ser. No. 112,238

Claims priority, application France, Apr. 26, 1979, 79 10653

Int. Cl.³ C07D *471/14;* A61K *31/505*

U.S. Cl. 424—251 **7 Claims**

1. A compound of the formula



in which n is 0 or 1, R is hydrogen, halogen, alkyl, alkoxy, or trifluoromethyl; R_2 is hydrogen, alkyl, cycloalkyl-alkyl, cycloalkyl, N,N-dialkylaminoalkyl or phenyl which is unsubstituted or substituted by halogen, R_3 is hydrogen or alkyl; and R_4 is hydrogen, alkyl, or benzyl, each alkyl and alkoxy having from 1 to 4 carbon atoms and each cycloalkyl having from 3 to 6 carbon atoms, or a pharmaceutically acceptable salt thereof, except the compounds in which simultaneously n=1, R_2 is hydrogen, ethyl, n-butyl, or phenyl and R_1, R_3 and R_4 are all hydrogen, said compound being a racemate or optically active isomer.

5. A method of treating a patient against anoxia which comprises administering to said patient a therapeutically effective amount of a compound of claim **1**, **2**, **3**, or **4** to provide an anti-anoxia effect.

4,358,452

N-[1,2,3,4,6,7,12,12 α-OCTAHYDRO-2H-INDOLO(2,3α)-QUINOLIZINYL-2β-YL]ALKANE AND BENZYL SULFONAMIDES AND ANTI-HYPERTENSIVE USE THEREOF

Albert Opalko, Maidenhead, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

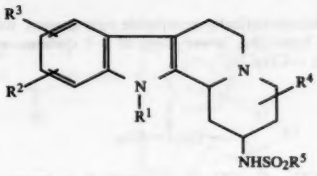
Filed Apr. 13, 1981, Ser. No. 253,975

Claims priority, application United Kingdom, May 9, 1980, 8015474

Int. Cl.³ A61K *31/445;* C07D *471/04*

U.S. Cl. 424—256 **5 Claims**

1. A compound of the formula:



in which

R^1 is hydrogen, alkyl of 1 to 6 carbon atoms or aralkyl of 7 to 10 carbon atoms;

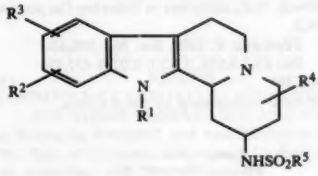
R^2 and R^3, independently, are hydrogen, halogen, alkoxy of 1 to 6 carbon atoms or alkyl of 1 to 6 carbon atoms with the proviso that when R^2 and R^3 are tertiary alkyl groups they are on nonadjacent carbon atoms;

R^4 is hydrogen, halogen or alkyl of 1 to 6 carbon atoms;

R^5 is alkyl of 1 to 6 carbon atoms, phenyl or substituted phenyl in which the substituent is halogen, alkoxy of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, alkylenedioxy of 1 to 6 carbon atoms, amino, alkylamino of 1 to 6 carbon atoms, dialkylamino of 2 to 12 carbon atoms or trifluoromethyl;

or a pharmaceutically acceptable acid addition salt thereof.

5. A method of treating hypertension in a mammal which comprises administering to said mammal an antihypertensively effective amount of a compound selected from the group consisting of an indoloquinolizine of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein

R^1 is hydrogen, alkyl of 1 to 6 carbon atoms or aralkyl of 7 to 10 carbon atoms;

R^2 and R^3, independently, are hydrogen, halogen, alkoxy of 1 to 6 carbon atoms or alkyl of 1 to 6 carbon atoms with the proviso that when R^2 and R^3 are tertiary alkyl groups they are on nonadjacent carbon atoms;

R^4 is hydrogen, halogen or alkyl of 1 to 6 carbon atoms;

R^5 is alkyl of 1 to 6 carbon atoms, phenyl or substituted phenyl in which the substituent is halogen, alkoxy of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, alkylenedioxy of 1 to 6 carbon atoms, amino, alkylamino of 1 to 6 carbon atoms, dialkylamino of 2 to 12 carbon atoms or trifluoromethyl.

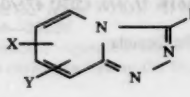
4,358,453
1,2,4-TRIAZOLO[4,3-A]PYRIDINES

James A. Bristol, Ann Arbor, Mich., and Raymond G. Lovey, West Caldwell, N.J., assignors to Schering Corporation, Kenilworth, N.J.

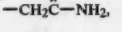
Filed Jan. 8, 1982, Ser. No. 338,182
Int. Cl.[3] A61K *31/53;* C07D *471/04*
U.S. Cl. 424—256 20 Claims

1. A compound represented by the formula:

I



and the pharmaceutically acceptable salts thereof, wherein R represents hydrogen, lower alkyl of 1-3 carbons, arylalkyl, $—CH_2OH$, $—CH_2CN$,



—NO, $—CH_2—O—CO—R$, (wherein R is lower alkyl or dimethylaminomethyl), $—N(R_1')_2$ (wherein R_1' is hydrogen, lower alkyl of 1-3 carbons or arylalkyl), $—S(O)_nCH_3$ or $—CH_2—S(O)_n—CH_3$ wherein n is zero, one or two;

X represents hydrogen, lower alkyl, halogen, hydroxy, lower alkoxy, or trifluoromethyl; and

Y represents $—OR_2$, $—NHR_2$, $—R_2$ or $—S(O)_nR_2$ wherein n is zero, one or two and wherein R_2 is -lower alkylene-vinyl, -lower alkylene-Ar, -lower alkene-Ar, -lower alkene -lower alkylene-Ar or -lower alkylene-O-Ar, in which Ar is substituted-phenyl, phenyl, thienyl, or pyridyl wherein the substituents on the substituted-phenyl are selected from one or more of —H, —Cl, —F, $—CH_3$, —t-butyl, $—CF_3$, $—OCH_3$ and —OH; provided that when $—R_2$ is —lower alkylene—O—Ar, Y is not $—OR_2$, $—NHR_2$ or $—S(O)_nR_2$.

8. A method for the treatment of the symptoms of peptic ulcer disease in mammals, which comprises administering to a mammal having peptic ulcer disease a therapeutically effective amount of a compound of claim 1.

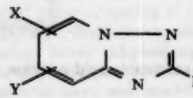
4,358,454
1,3,4-TRIAZOLO[1,5-a]PYRIDINES

James A. Bristol, Ann Arbor, Mich., and Raymond G. Lovey, West Caldwell, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jan. 8, 1982, Ser. No. 338,454
Int. Cl.[3] A61K *31/53;* C07D *471/04*
U.S. Cl. 424—256 17 Claims

1. A compound represented by the formula:

I



and the pharmaceutically acceptable salts thereof, wherein R represents hydrogen, lower alkyl of 1-3 carbons, arylalkyl, $—CH_2OH$, $—CH_2CN$,

$—NO_2$, —NO, $—CH_2—O—CO—R_1$, (wherein R_1 is lower alkyl or dimethylaminomethyl), $—N(R_3)_2$ (wherein each R_3 independently is hydrogen, lower alkyl of 1-3 carbon atoms or arylalkyl), $—S(O)_n—CH_3$ or $—CH_2—S(O)_n—CH_3$ wherein n is zero, one or two; X represents hydrogen, lower alkyl, halogen, hydroxy, lower alkoxy, or trifluoromethyl; and Y represents $—R_2$, $—OR_2$, $—NHR_2$, or $—S(O)_nR_2$ wherein n is zero, one or two and R_2 is -lower alkylene-vinyl, -lower alkylene-Ar, -lower alkene-Ar, -lower alkene-lower alkylene-Ar, or -lower alkylene-O-Ar, wherein Ar is substituted-phenyl, phenyl, thienyl, or pyridyl wherein there are one or more substituents on the substituted-phenyl independently selected from —H, —Cl, —F, $—CH_3$, -t-butyl, $—CF_3$, $—OCH_3$ and —OH; provided that when $—R_2$ is lower alkylene-O—Ar, Y is not $—OR_2$, $—NHR_2$ or $—S(O)_nR_2$.

7. A method for the treatment of the symptoms of peptic ulcer disease in mammals, which comprises administering to a mammal having peptic ulcer disease a therapeutically effective amount of a compound of claim 1.

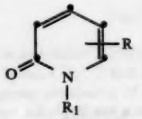
4,358,455
ARALKYLAMINDETHANOL HETEROCYCLIC COMPOUNDS

Joseph G. Atkinson, Montreal, Canada; John J. Baldwin, Gwynedd Valley, and David E. McClure, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

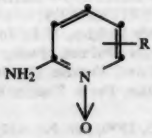
Filed Dec. 23, 1980, Ser. No. 219,725
Int. Cl.[3] A61K *31/44;* C07D *211/86*
U.S. Cl. 424—263 26 Claims

1. Compounds of the formula:

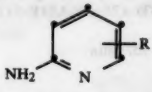
(a)



(c)

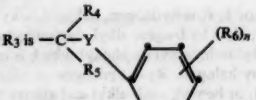


(g)



tautomers, pharmaceutically acceptable salts and individual enantiomers thereof wherein R_1 is H or OH,

wherein



wherein

R_4 and R_5 are independently selected from H and C_1–C_3alkyl,

Y is CH_2, $(CH_2)_2$, $(CH_2)_3$, $(CH_2)_4$ or $—CH_2—O—$

R_6 is H, OH, OCH_3, halogen, methylenedioxy or C_1–C_3alkyl and

n is 1 or 2.

19. Pharmaceutical compositions for (a) reducing intraocu-

lar pressure (b) treating hypertension or (c) effecting bronchodilation containing a therapeutically effective amount of a compound of claim 1 and a carrier.

4,358,456

ANTIPSYCHOTIC PIPERIDINOMETHYL-INDOLE DERIVATIVES

Terence J. Ward, Slough, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

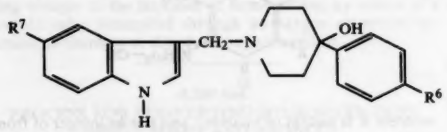
Filed Apr. 27, 1981, Ser. No. 257,829

Claims priority, application United Kingdom, May 3, 1980, 8014938

Int. Cl.³ A61K *31/445;* C07D *401/06*

U.S. Cl. 424—267 7 Claims

1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein R^6 represents hydrogen, halogen, trifluoromethyl or methyl and R^7 represents hydrogen, methyl, hydroxy or methoxy.

6. A method for the treatment of psychoses in a mammal which method comprises administering to said mammal an effective amount of a compound as claimed in claim 1, or a pharmaceutically acceptable salt thereof.

4,358,457

TETRAHYDRO-7a-(OPTIONALLY SUBSTITUTED PHENYL)-1H-PYRROLO[1,2-b][1,2,4]-TRIAZOLE-2(3H)-THIONES

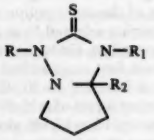
Winton D. Jones; John M. Kane, both of Cincinnati, and Francis P. Miller, Loveland, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Jul. 27, 1981, Ser. No. 286,950

Int. Cl.³ A61K *31/41;* C07D *487/04*

U.S. Cl. 424—269 5 Claims

1. A compound of the formula



wherein R is H or C_{1-5} straight or branched chain alkyl; R_1 is H, C_{1-10} straight or branched chain alkyl, allyl or phenyl; and R_2 is phenyl or phenyl substituted with F, Cl, C_{1-5} straight or branched chain alkyl, di-F, di-Cl or di-Br; and the pharmaceutically acceptable acid addition salts thereof.

4. A pharmaceutical composition comprising in unit dosage form about 5–500 mg of a compound of claim 1 and a significant amount of a pharmaceutically acceptable carrier.

4,358,458

TERTIARY IMIDAZOLYL ALCOHOLS AND METHOD FOR THE TREATMENT OF GENERALIZED AND LOCAL INFECTIONS CAUSED BY FUNGI AND YEASTS

Peter Scharwächter, Moorrege; Klaus Gutsche, Rellingen; Wilhelm Kohlmann, Moorrege; York Hartleben, Heist, and Wolfgang Heberle, Appen, all of Fed. Rep. of Germany, assignors to Nordmark-Werke GmbH, Uetersen, Fed. Rep. of Germany

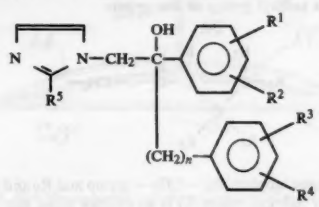
Filed May 13, 1977, Ser. No. 796,613

Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623129

Int. Cl.³ A61K *31/415;* C07D *233/60*

U.S. Cl. 424—273 R 17 Claims

1. A basic imidazolyl alcohol corresponding to the general formula



(I)

in which

R^1, R^2, R^3 and R^4, which may be the same or different, each represent a member selected from the group consisting of hydrogen, the halogen atoms, the lower alkyl groups with 1 to 4 carbon atoms and the lower alkoxy groups with 1 to 4 carbon atoms, R^5 represents a member selected from the group consisting of hydrogen and the lower alkyl groups with 1 to 3 carbon atoms and

n is an integer selected from the group consisting of 0 and 1, and the pharmacologically compatible acid addition salts thereof.

16. The method for the treatment of generalized or local infections caused by fungi and yeasts comprising orally administering to the mammal to be treated a compound according to claim 1 in an amount ranging from 0.5 to 100 mg./kg. of body weight.

4,358,459

CYCLOPROPANE CARBOXYLIC ACID AND PROCESS FOR THEIR PRODUCTION AND USE

Werner Schwarze, Frankfurt, and Axel Kleemann, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

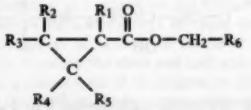
Filed Dec. 17, 1980, Ser. No. 217,443

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2951939

Int. Cl.³ C07C *69/74;* A01N *53/00*

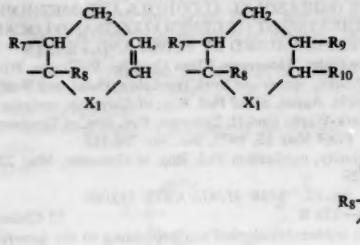
U.S. Cl. 424—283 33 Claims

1. A cyclopropane carboxylic acid ester of the formula (I)

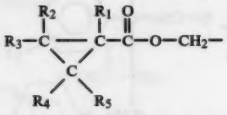


(I)

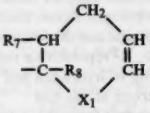
wherein R_1, R_2, R_3, R_4, and R_5 are either hydrogen, halogen, or alkyl, R_6 is the group



R_7 is a hydrogen atom, a methyl or phenyl group, R_8 is a hydrogen, a methyl group or the group



X_1 is an oxygen atom or the —CH_2— group and R_9 and R_{10} are hydrogen or halogen when X_1 is an oxygen atom and R_9 and R_{10} are halogen when X_1 is the —CH_2— group, with the proviso that when R_6 is the group



and X_1 is the —CH_2— group, not more than one of R_4 and R_5 can be alkyl and that not more than one of R_2 and R_3 can be alkyl unless at least one of R_4 and R_5 is halogen.

29. A pesticidal composition comprising as the active component aninsecticidally or acarinacidally effective amount of a compound according to claim 1 together with a carrier.

4,358,460

SUBSTITUTED 3-ARYL-2-CYCLOALKEN-1-ONE AND METHOD OF PREPARATION THEREOF

Erich Cohnen, Hamburg, Fed. Rep. of Germany, assignor to Beiersdorf Aktiengesellschaft, Fed. Rep. of Germany

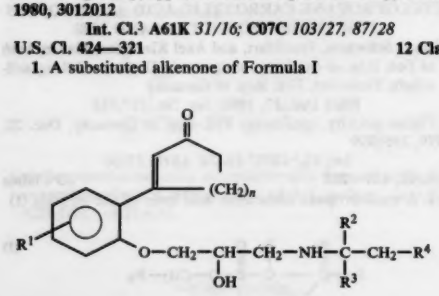
Filed Mar. 30, 1981, Ser. No. 248,928

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012012

Int. Cl.³ A61K *31/16*; C07C *103/27, 87/28*

U.S. Cl. 424—321 **12 Claims**

1. A substituted alkenone of Formula I



(I)

wherein

R^1 is alkyl or acylamino each having 1 to 4 carbon atoms, hydrogen, or halogen,

R^2 and R^3 individually are hydrogen, methyl or ethyl,

R^4 is hydrogen or dimethoxyphenyl, and

n is 1 or 2

or physiologically acceptable acid addition salts thereof.

10. The alkenone of claim 1 wherein R^1, R^2, and R^3 are hydrogen, R^4 is 3,4 dimethoxyphenyl, and n is 1.

4,358,461

ANTIALLERGIC AGENT

Yoshitaka Maki, Kyoto; Shinji Terao, Toyonaka, and Masazumi Watanabe, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

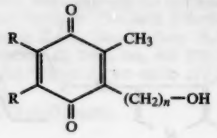
Filed Apr. 2, 1981, Ser. No. 250,298

Claims priority, application Japan, Apr. 21, 1980, 55-53127

Int. Cl.³ A61K *31/12*

U.S. Cl. 424—331 **7 Claims**

1. A method for treatment of a mammal suffering from allergic disease due to SRS-A, which comprises administering to said mammal an effective amount of a compound of the formula:



wherein R is methyl or methoxy, and n is an integer of from 4 to 22.

4,358,462

PROCESS OF BREWING AN ALCOHOLIC BEVERAGE FROM RICE

Masahisa Takeda, Komae, Japan, assignor to Ozeki Sake Brewing Co., Ltd., Hyogo, Japan

Continuation-in-part of Ser. No. 902,691, May 4, 1978, abandoned. This application May 19, 1980, Ser. No. 151,369

Claims priority, application Japan, Feb. 27, 1978, 53-021917

Int. Cl.³ C12C *11/00*; C12G *3/00*

U.S. Cl. 426—13 **11 Claims**

1. A process for brewing a sake comprising:

(a) saccharifying a first amount of a steamed or cooked rice material with an enzyme composition at from 50° to 55° C. at a pH of from 4.5 to 6.0 without addition of any protease to produce a first saccharified slurry or mash wherein said rice material is a member selected from the group consisting of (1) an unpolished rice (2) a mixture of an unpolished rice and a cleaned rice of any cleaning yield, and (3) a mixture of a reddish bran and a member selected from the group consisting of an unpolished rice, cleaned rice of any cleaning yield, yellowish rice bran, white rice bran and a mixture thereof;

(b) said enzyme composition of step (a) being substantially free from any protease and containing a saccharifying enzyme having a saccharifying activity of from 1×10^5 to 3×10^5 units/g of the composition and which is produced by a microorganism selected from the group consisting of Rhizopus, Aspergillus, Endomyces, and *Bacillus subtilis;*

(c) fermenting said first saccharified slurry or mash with a yeast culture at from 10° to 30° C. at a pH of 3.5 to 4.0 until a supernatent liquid of said slurry or mash having a 0 to +25 sake meter, 13 to 17.5% alcohol content and 0.2 to 0.6% sugar content is obtained to produce a matured mash;

(d) separately, saccharifying a second amount of steamed or cooked rice material with an enzyme composition at from 50° to 55° C. for 8 to 24 hours to produce a second saccharified mash, wherein said rice material is the same as that used in step (a), said second amount of rice material is equal to approximately 5 to 20% by weight of said first amount used in step (a) and said enzyme composition is the same as that used in step (a);

(e) mixing said second saccharified mash of step (d) with said matured mash of step (c); and

(f) removing grains from the resulting mixture of step (e) to produce said sake.

4,358,463

METHOD FOR THE PRODUCTION OF FERMENTATION VINEGAR

Hermann A. Aeschbach, Montreux, Switzerland, assignor to Process Engineering Company SA, Maennedorf, Switzerland

Filed Sep. 18, 1980, Ser. No. 188,277

Claims priority, application Switzerland, Sep. 26, 1979, 8642/79

Int. Cl.[3] C12J *1/04;* C12P *7/54*

U.S. Cl. 426—17 5 Claims

1. In a method for the submersed, automatically controlled production of vinegar from ethanol, of the type in which fermenting is begun by pre-acidifying mash with acetic acid bacteria, the improvement comprising completing fermenting with constant dissolved oxygen content while the alcohol in said mash becomes completely consumed, with constant air supply and without introduction of new substrate; and recovering vinegar at the terminus of fermentation, by means of a product valve controlled through an oxygen electrode, according to increase in dissolved oxygen content.

4,358,464

PROCESS FOR CONVERTING SOUR WHEY INTO SWEET WHEY AND PRODUCT

Joseph A. Soehnlen, Navarre, Ohio, assignor to Superior Dairy, Inc., Canton, Ohio

Continuation-in-part of Ser. No. 821,099, Aug. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 699,718, Jun. 25, 1976, abandoned. This application Aug. 14, 1978, Ser. No. 933,605

Int. Cl.[3] A23C *21/02*

U.S. Cl. 426—41 20 Claims

1. A process for converting sour whey, made by acidifying milk and removing the resulting curd, into sweet whey containing substantially all the food value of the whey, which process comprises splitting at least half of the lactose originally present in the milk by a lactase enzyme, and de-acidifying the whey by contact of the whey with an anion-exchange material, while retaining the non-ionizable substances in the whey.

15. A sweet whey product made by the process of claim 1.

4,358,465

PHOSPHOPEPTIDES FROM CASEIN-BASED MATERIAL

Gerard Brule; Loïc Roger, both of Rennes; Jacques Fauquant, Monfort, and Michel Piot, Rennes, all of France, assignors to Institut National de la Recherche Agronomioue, Paris, France

Filed Jan. 28, 1981, Ser. No. 229,062

Claims priority, application France, Feb. 1, 1980, 80 02281

Int. Cl.[3] A23C *23/00;* A23J *3/00;* C12P *21/06;* C07G *7/00*

U.S. Cl. 426—42 9 Claims

1. A method for recovering phosphopeptides from a casein-based material containing phosphocaseinates of monovalent cations or paracasein derived therefrom comprising subjecting said casein-based material to an enzymatic hydrolysis at a PH in the range of 7 to 9 and a temperature in the range of 37° to 45° C. by means of at least one proteolytic enzyme capable of substantially reproducing the proteic digestion which occurs in vivo in the human body, subjecting the resultant hydrolyzate to at least one ultrafiltration step on membranes which retain the enzyme but allow all the peptides of the hydrolyzate to pass in the permeate to obtain a permeate containing phosphopeptides and non-phosphorylated peptides, adding to the permeate at least one bivalent cation salt to form aggregates of the phosphopeptides to produce a solution containing essentially the aggregates of phosphopeptides and the non-phosphorylated peptides, subjecting the solution to at least one ultrafiltration step with membranes that retain the aggregates of phosphopeptides and allow the non-phosphorylated peptides to pass through, and recovering the retained phosphopeptides.

4,358,466

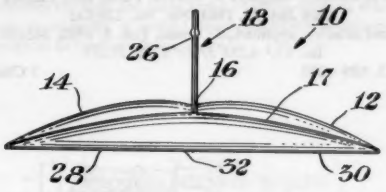
FREEZER TO MICROWAVE OVEN BAG

Fred Stevenson, Beaverton, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 139,363, Apr. 11, 1980, abandoned. This application Jul. 28, 1980, Ser. No. 172,922

Int. Cl.[3] B65D *30/18*

U.S. Cl. 426—106 28 Claims



21. A flexible container of thermoplastic film, said film comprised of an inner layer and an outer layer, said film folded upon itself and gussetted at its bottom so that surfaces of the inner layer face one another, the gussetted bottom comprising the major portion of the bag, the facing surfaces of the inner layer at the margins of the film sealed together to close the sides of the container, said gussetted bottom forming adjacent wing pouches, said film above said gussetted bottom comprising a minor portion of said container and forming a central neck having a channel permitting access into said wing pouches, said neck being of sufficient height for filling, folding and using while maintaining a spill-free, lay-flat bag configuration.

4,358,467

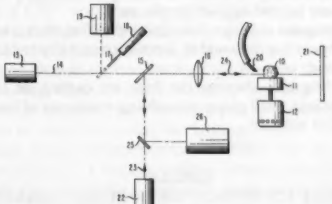
METHOD FOR SHELLING OF NUTS WITH A LASER BEAM

Chandra K. N. Patel, 5 Manor Hill Rd., Summit, N.J. 07901

Filed Oct. 9, 1980, Ser. No. 195,374

Int. Cl.[3] A23L *1/212*

U.S. Cl. 426—237 10 Claims



1. The method of removing a shell from a hard shell nut comprising directing at a region on the surface of the shell a first laser beam of sufficient power to cause disintegration of the shell at the point of contact of the laser beam, causing relative motion between the shell and said point of contact so as to establish a closed path of disintegration around the shell, thus dividing the shell into at least two segments in such manner as to enable the shell to be parted away from the nut meat, directing, at a point on said path around the shell, a second laser beam, of a wavelength at which the shell and the meat of

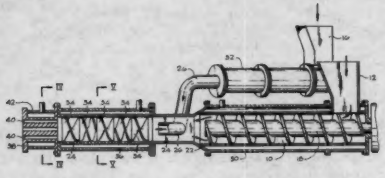
said nut have a significantly different reflectivity and of a power insufficient to cause significant disintegration of said shell, detecting the intensity of light of said wavelength reflected from said point during said disintegration by said first laser beam, and discontinuing the application of said first laser beam to said shell when the change in said intensity of reflected light thus detected indicates that the nut meat at said point has become exposed by the disintegration of said shell.

4,358,468

PROCESS FOR PREPARING A MARBLED MEAT PET FOOD

Francis H. Dolan, Roseneath, and Michael S. Conner, Cobourg, both of Canada, assignors to General Foods Inc., Canada

Filed Jan. 26, 1981, Ser. No. 228,532
Claims priority, application Canada, Feb. 6, 1980, 345155
Int. Cl.³ A23J 3/00; A23L 1/275
U.S. Cl. 426—250 7 Claims



1. A process for the preparation of intermediate-moisture pet food having a first ingredient phase simulating lean meat intermixed with a second ingredient phase simulating fat and shaped to resemble small cuts of marbled meat which comprises:

pressure casting the first ingredient phase into elongated rectangular form and

pressure casting the second ingredient phase centrally into the elongated rectangular form of the first ingredient phase;

urging the combined casting of first and second ingredient phases through an enclosed blending compartment having oriented therein a plurality of stationary elements which cut, divide and axially rotate substantial portions of the casting in a manner to randomly blend the first and second phases without altering the outlying physical dimensions of the casting, and simultaneously maintaining a pressure within said blending compartment from about 250 to 400 psig sufficient to bind the phase together thereby converting the casting to that of a casting of randomly blended first and second ingredient phases;

heat setting the casting of blended ingredient phases to blend the phases together and to form a structurally stable material; and

subdividing and shaping the heat set casting of blended phases into small pieces resembling small cuts of lean meat marbled with fat.

4,358,469

PROCESS OF MANUFACTURE OF SUGAR CARAMEL IN POWDERED FORM

Louis F. Lavie, 6 Avenue Dapples, Lausanne, Vaud, Switzerland

Filed Feb. 26, 1981, Ser. No. 238,648
Claims priority, application Switzerland, Jul. 4, 1980, 5174/80
Int. Cl.³ A23L 1/27
U.S. Cl. 426—250 5 Claims

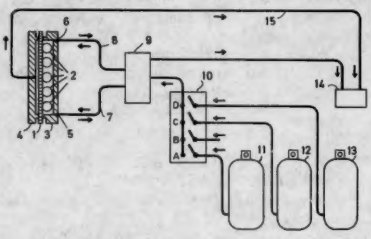
1. Process of manufacturing of sugar caramel compositions in essentially dry powdered form, comprising heating sugar to a temperature between 140° and 200° C., cooling the mass of viscous caramel thus obtained to about 120° C., adding an ammonium salt which is volatile or in gaseous form at this temperature in an amount sufficient to precolor the viscous mass and then transforming the hot viscous mass into a foam by adding a mixture of sodium bicarbonate and a comestible acid to react with said sodium bicarbonate, cooling the foam to room temperature to form a solidified foam and powdering the solidified foam.

4,358,470

PROCESS AND APPARATUS FOR THE TREATMENT OF SAMPLES WITH A SUCCESSION OF LIQUIDS

Soren W. Rasmussen, Copenhagen, Denmark, assignor to LKB-Produkter AB, Bromma, Sweden

Continuation of Ser. No. 10,846, Feb. 8, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,391
Claims priority, application Sweden, Feb. 10, 1978, 7801564
Int. Cl.³ A01G 5/06; A01M 1/00, 3/00; C13C 13/08
U.S. Cl. 427—4 8 Claims



4. Process for the treatment of samples with a succession of liquids, such as the staining of biological samples comprising the steps:

placing a sample to be treated into a closed chamber;

placing each of the liquids into a separate closed supply vessel having a variable volume;

filling each vessel with the selected one of said liquids and expelling gases therefrom;

introducing a first liquid into said chamber from a supply vessel and filling the chamber completely to exclude gases therefrom;

introducing a second liquid into said chamber from another supply vessel without introducing gas from the atmosphere and without mixing the first and second liquids while simultaneously withdrawing the liquid previously introduced into the chamber.

4,358,471

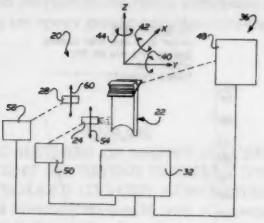
CONTROL APPARATUS

Thomas Derkacs, Mayfield; Charles W. Fetheroff, Willowick; Istvan M. Matay, North Royalton, and Istvan J. Toth, Richmond Heights, all of Ohio, assignors to TRW Inc., Cleveland, Ohio

Division of Ser. No. 923,693, Jul. 11, 1978, abandoned. This application Feb. 26, 1981, Ser. No. 238,213
Int. Cl.³ B05D 1/12, 1/04, 1/06, 1/02
U.S. Cl. 427—9 211 Claims

1. A method of forming an airfoil, said method comprising the steps of providing a base having a configuration which is different than the configuration of the airfoil, applying material to the base to form the airfoil, said step of applying material to the base to form the airfoil including the steps of operating a spray means to direct a flow of material toward the base to form on the base a body of sprayed material extending at least part way around the base and having an exterior surface area with a configuration corresponding to the configuration of at

least a portion of the airfoil, and removing the base from the body of sprayed material to provide an airfoil having a cavity



with a configuration corresponding to the configuration of the base.

4,358,472

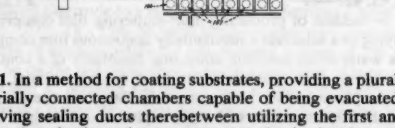
MULTI-LAYER COATING METHOD

Edward A. Small; Richard H. Edwards; Eugene A. Eufusia; Robert M. Clary, and Nils H. Bergfelt, all of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 916,073, Jun. 16, 1978, abandoned. This application May 22, 1980, Ser. No. 152,327

Int. Cl.³ B05D *1/36, 3/06*

U.S. Cl. 427—10 **7 Claims**



1. In a method for coating substrates, providing a plurality of serially connected chambers capable of being evacuated, and having sealing ducts therebetween utilizing the first and last chambers in the series as entrance and exit chambers respectively, utilizing certain of the serially connected chambers as coating chambers, evacuating said coating chambers down to at least below a predetermined vacuum, evacuating the remaining chambers in the series on the opposite ends of the serially connected coating chambers so that at least the chambers closest to the coating chambers have a pressure which is below that of the pressure in the coating chambers to thereby positively control the composition of the gases in the coating chambers during the coating operation, closing off the entrance chamber and the exit chamber so that they are out of communication with the other chambers in the series, providing in an ambient atmosphere a plurality of substrates to be coated, continuously advancing one of said plurality of substrates from the ambient atmosphere into the entrance chamber, closing off the entrance chamber from the ambient atmosphere, evacuating the entrance chamber, opening the entrance chamber so it is in communication with the other chambers in the series, rapidly advancing said substrate from the entrance chamber into the remaining chambers, closing the entrance chamber so it is out of communication with the other chambers in the series as soon as said substrate has been moved out of the entrance chamber, continuously advancing the substrate through the remaining chambers preceding the coating chambers and then into the coating chambers at a rate which is less than the rate it is advanced out of the entrance chamber, positioning said substrate in the coating chambers as it is being advanced so it lies in a generally horizontal plane with the surface to be coated facing downwardly, depositing on said substrate while it is being advanced in said coating chambers on the downwardly facing surface successive layers of coating materials with only one layer of one material being deposited in each coating chamber, continuously advancing the substrate through the chambers following the coating chambers and preceding the exit chamber, closing the exit chamber so it is out of communication with the ambient atmosphere, opening the exit chamber so that it is in communication with the chambers following the coating chambers, rapidly advancing said substrate into the exit chamber at a rate greater than the rate of advance in the chambers following the coating chambers, closing the exit chamber so that it is out of communication with the chambers following the coating chambers as soon as said substrate has been advanced into the exit chamber, opening the exit chamber to the ambient atmosphere, advancing said substrate from the exit chamber into the ambient atmosphere and moving the remaining substrates of the plurality of substrates through the same series of steps while at least at all times maintaining a spaced apart relationship between the substrates as they are being coated.

4,358,473

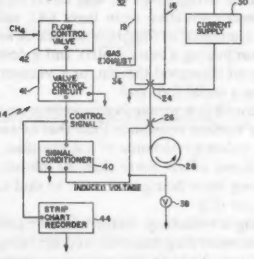
PROCESS CONTROL SYSTEM

Harold E. DeBolt, Boulder, Colo.; Joseph Morrissey, Dracut, and Raymond J. Suplinskas, Haverhill, both of Mass., assignors to Avco Corporation, Wilmington, Mass.

Filed May 22, 1981, Ser. No. 266,435

Int. Cl.³ B05D *5/00*

U.S. Cl. 427—10 **12 Claims**



1. In a CVD reactor system for depositing a coating on a filament substrate in a heating zone within a reaction chamber to make a continuous filament, said substrate being heated by passing an electric current through the filament thereby defining a heating zone, the improvement comprising:

a process control system having a pair of electrodes, at least one of which is outside the heating zone;

voltage detection means coupled to said pair of electrodes for detecting a voltage induced between the electrodes;

means for generating a control voltage in response to said induced voltage coupled to the voltage detection means; and

means responsive to said control means for controlling a process parameter.

9. In a process for depositing B_4C on an electrically-heated boron filament moving through a heating zone by adding a hydrocarbon, a boron-forming feedstock, and hydrogen to the reaction zone, a method of controlling the process comprising:

sensing a voltage induced in said filament outside of the heating zone forming a control voltage responsive to the magnitude of the induced voltage; and

using said control voltage to control the flow of the hydrocarbon and/or hydrogen to said reaction zone.

4,358,474

METHOD FOR ELECTRIC RECORDING

Shiro Nakano, Suita; Yoshiro Naito, Kawai; Shigeki Nakamura, Osaka; Tosimasa Ikena, Kusatsu, and Kazuo Tanaka, Osaka, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 62,576, Jul. 31, 1979, Pat. No. 4,308,314. This application Jul. 2, 1981, Ser. No. 280,552

Claims priority, application Japan, Aug. 4, 1978, 53-95,547; Dec. 25, 1978, 53-164256; Jan. 12, 1979, 54-3300

Int. Cl.³ B41M 5/24

U.S. Cl. 427—12 22 Claims

1. A method for electric recording which comprises contacting a receptor sheet with one surface of an electric recording material, said electric recording material comprising:

(A) a semiconductive resin layer comprising a resin matrix and a conductivity-imparting agent dispersed therein and having a surface resistance of more than 1 ohm to less than 10^5 ohms and a volume resistance of not more than 10^3 ohms-cm which surface resistance and volume resistance parameters are such as to render the electric recording material effective for electric recording at voltages not more than 90 V,

(B) a metal-containing resin layer comprising a resin matrix and 5 to 60% by volume of a metal powder dispersed therein and having a surface resistance of 10^5 to 10^{16} ohms and a volume resistance of not more than 10^4 ohms-cm, said metal-containing layer being laminated to one surface of said semiconductive resin layer (A), said metal powder being stable and electrically conductive and having a specific resistance of not more than 2×10^{-4} ohms-cm and an average particle diameter of from 0.2 to 20 microns,

(C) an electrically conductive covering layer having a surface resistance not exceeding 10^4 ohms and a volume resistance of not more than 10^2 ohms-cm, the surface resistance being lower in said covering layer (C) then in said semiconductive resin layer (A), said covering layer being laminated to the other surface of said resin layer (A) and comprising a resin matrix and a conductivity-imparting agent dispersed therein, or a vacuum-deposited metal film or a metal foil, and

(D) optionally, a protective covering resin layer having a higher surface resistance than that of said covering layer (C), a volume resistance of not less than 10^2 ohms-cm and a thickness of not more than 10 microns, said protective covering layer being laminated to said conductive covering layer (C);

contacting a recording stylus with the other surface of the electric recording material, and applying a voltage of not more than 90 V to the recording material through said recording stylus, thereby breaking down said semiconductive resin layer (A) and said conductive covering layer (C) of said recording material and also said protective layer (D) if it is present, and thus transferring the broken layers to said receptor sheet.

4,358,475

METHOD OF PREPARING ACTIVE ELECTRODES

David E. Brown, Weybridge, and Mahmood N. Mahmood, Walton-on-Thames, both of England, assignors to The British Petroleum Company Limited, London, England

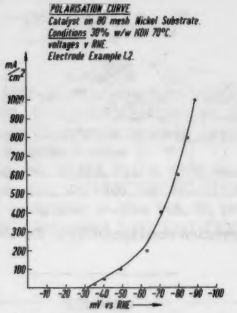
Continuation of Ser. No. 73,709, Sep. 10, 1979, abandoned. This application Mar. 11, 1981, Ser. No. 242,458

Claims priority, application United Kingdom, Sep. 21, 1978, 37556/78

Int. Cl.³ B05D 5/12

U.S. Cl. 427—34 11 Claims

1. A method of producing metal electrodes comprising treating a metal electrode substrate so as to coat the substrate surface with a homogeneous solution of the compounds of (i) at least one metal selected from a first group of iron, cobalt, nickel and manganese (ii) at least one other metal selected from a second group of molybdenum, tungsten and vanadium, each of which compound, when not an oxide, is capable of thermal decomposition to the corresponding metal oxide, thermally decomposing the metal compounds, other than the oxides, on the substrate to the corresponding oxides or mixed oxides and



curing the oxide-coated substrate in a reducing atmosphere at elevated temperature so as to convert at least some of the oxides to a metallic state.

4,358,476

RADIATION-CURABLE COMPOSITIONS CONTAINING WATER

David J. Zimmer; Frederick H. Sexsmith, both of Erie, and Dennis D. Howard, Girard, all of Pa., assignors to Lord Corporation, Erie, Pa.

Filed Jun. 24, 1981, Ser. No. 278,299

Int. Cl.³ B05D 3/06

U.S. Cl. 427—44 5 Claims

1. A method of producing light-scattering film comprising applying to a substrate a substantially continuous film comprising a water-in-oil emulsion consisting essentially of a continuous organic phase containing no inert organic solvent, said organic phase having homogeneously dispersed therein discrete droplets of water, said organic phase containing at least one olefinically unsaturated radiation-curable polymeric material and containing no material having ionogenic structural features, said polymeric material being substantially water-insoluble, essentially non-reactive with water and having at least one olefinically unsaturated group per molecule, the amount of water being sufficient to provide a stable water-in-oil emulsion which is visually translucent to opaque, and exposing said applied film to a source of radiation energy for a time sufficient to cure such film before water is released from said film.

4,358,477

PROCESS OF CURING UNSATURATED EPOXY COATING COMPOSITION WITH RADIATION AND EPOXY CURING AGENT, AND COATED SUBSTRATE

Arie Noomen, Voorhout; Johannes Mostert, Katwijk Aan Zee, and Egbert Wolters, Amsterdam, all of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Sep. 5, 1979, Ser. No. 72,603

Claims priority, application Netherlands, Sep. 7, 1978, 7809122

Int. Cl.³ B32B 27/16; C08F 2/50

U.S. Cl. 427—54.1 7 Claims

1. A process for coating a substrate which comprises applying to the substrate a radiation curable composition comprising

(1) an epoxy compound which consists essentially of an epoxy compound which contains at least one acryloyl or methacryloyl group,

(2) a photoinitiator, and

(3) a cross-linking agent which reacts at ambient temperature with the epoxy groups of (1) and is a member selected from

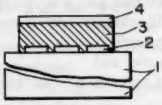
the group consisting of amines, polyaminoamides, aldimines, ketimines, and carboxylic acids physically blended together, exposing the resulting coating to U.V. radiation at an ambient temperature to polymerize the epoxy compound and chemically reacting the epoxy groups with the cross-linking agent.

4,358,478

SPUTTERING METHOD OF MANUFACTURING FILM TYPE LIGHT RECEIVING ELEMENT UNDER CONTROLLED OXYGEN ATMOSPHERE

Mario Fuse, and Mutsuo Takenouchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,736
Claims priority, application Japan, Mar. 14, 1980, 55/31516
Int. Cl.³ H01L *27/14*
U.S. Cl. 427—76 **20 Claims**



9. A method of manufacturing a film type light receiving element comprising the steps of: providing a substrate of quartz glass having an optically polished surface; forming belt-shaped electrodes by forming a chromium base layer in a belt-shape to a thickness of approximately 700 Å and an Au film upon said chromium base; forming a layer of 5% As - 95% Se upon said belt-shaped electrode to a thickness of 2 μm; forming a layer of 5% As - 20% Te - 75% Se upon the last-mentioned layer to a thickness of approximately 0.3 μm; forming a layer of 5% As - 95% Se on the last-mentioned layer to a thickness of approximately 400 Å; masking the device thus formed for producing an optically transmissive electrode; disposing the element thus formed in a magnetron type sputtering device using a 90% In_2O_3 - 10% SnO_2 sintered body as a target; providing a pressure in a vacuum chamber of said magnetron type sputtering device in which said element is disposed of no greater than 2×10^{-5} Torr; introducing oxygen into said chamber until the pressure therein is increased to approximately 2.5×10^{-4} Torr; introducing argon into said chamber until the pressure therein is approximately 3.5×10^{-3} Torr; pre-sputtering said element in said sputtering device; and forming an ITO film to a thickness in the range of 500 Å to 5000 Å.

19. A film type light receiving element comprising: a substrate of quartz glass having an optically polished surface; belt-shaped electrodes having a chromium base layer in a belt-shape at a thickness of approximately 700 Å and an Au film upon said chromium base; a layer of 5% As - 95% Se upon said belt-shaped electrode at a thickness of 2 μm; a layer of 5% As - 20% Te - 75% Se upon the last-mentioned layer at a thickness of approximately 0.3 μm; a layer of 5% As - 95% Se on the last-mentioned layer at a thickness of approximately 400 Å; and, an optically transmissive electrode formed by masking the device thus formed and disposing the element in a magnetron type sputtering device using a 90% In_2O_3 -10% SnO_2 sintered body as a target, providing a pressure in a vacuum chamber of said magnetron type sputtering device in which said element is disposed of no greater than 2×10^{-5} Torr, introducing oxygen into said chamber until the pressure therein is increased to approximately 2.5×10^{-4} Torr, introducing argon into said chamber until the pressure therein is approximately 3.5×10^{-3} Torr, pre-sputtering said element in said sputtering device, and forming an ITO film to a thickness in the range of 500 Å to 5000 Å.

4,358,479

TREATMENT OF COPPER AND USE THEREOF

Michael J. Canestaro, Endicott, and Edmond O. Fey, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1980, Ser. No. 211,998
Int. Cl.³ B05D *5/12*; C23F *1/00*
U.S. Cl. 427—98 **11 Claims**

1. A method for preparing a printed circuit which comprises:

(A) contacting a nodular surface of a copper foil with an oxidizing composition for a length of time sufficient to oxidize said nodular surface of said copper foil to further roughen said nodular surface;

(B) laminating the copper foil and dielectric substrate material together with said nodular surface confronting the surface of said substrate;

(C) removing the copper from said substrate etching;

(D) catalyzing said substrate for electroless metal deposition subsequent to removing the copper in step (C); and

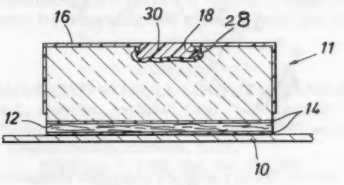
(E) electrolessly plating the substrate with conductive metal.

4,358,480

METHOD OF REPAIRING SURFACE DAMAGE TO POROUS REFRACTORY SUBSTRATES

Glenn M. Ecord, and Calvin Schomburg, both of Houston, Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 22, 1981, Ser. No. 266,254
Int. Cl.³ B32B *35/00*; B05D *3/02, 3/12*; B32B *3/26*
U.S. Cl. 427—140 **15 Claims**



1. A method of repairing damage to a porous refractory material which may be coated with a glass coating comprising applying hydroylyzed tetraethyl orthosilicate to the damaged area, curing said hydrolyzed tetraethyl orthosilicate, applying to said damaged area a pliable filler comprised of hydrolyzed tetraethyl orthosilicate and powdered refractory substrate, and heating the damaged area to cure said filler.

4,358,481

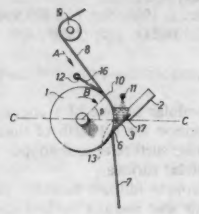
METHOD AND APPARATUS FOR COATING BOTH SIDES OF A MOVING WEB

Hans I. Wallsten, Lausanne, Switzerland, assignor to Inventing S.A., Lausanne, Switzerland

Filed May 26, 1981, Ser. No. 266,832
Claims priority, application Sweden, Jun. 10, 1980, 8004314
Int. Cl.³ B05D *3/12*
U.S. Cl. 427—211 **10 Claims**

1. A method of coating both sides of a moving paper web by feeding the web downwardly through coating material contained in a dam comprising a support roller rotating in the same direction as the web and a cooperating blade directed towards the roller and forming with the latter a nip through which the web passes, one side of the web being partially wrapped around the roller beginning at a location above the surface of the coating material in the dam, characterized in that an excess of coating material is introduced between the roller and said one side of the web at about the location where the web begins

to wrap around the roller such that on passage of the web through said nip the excess coating material thus introduced causes a portion of the web to bulge outwardly from the roller



in the dam and below the surface of the coating material contained therein and the excess of coating material to be discharged laterally into the dam at locations below the surface of the coating material contained therein.

4,358,482

END FINISHING COMPOSITE TRIM STRIPS

Warren L. Jubelt, East Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 23, 1981, Ser. No. 314,232
Int. Cl.³ B05D *1/32*
U.S. Cl. 427—259 **2 Claims**

1. A method of end finishing a composite elongated molding strip comprised of a first polymeric body portion and a second body portion that is readily visibly distinguishable from said first body portion at a cut end, the method comprising:

coating the top surface of a said strip in the area to be end finished with a peelable elastomeric mask material;

cutting said strip in said coated area to reveal a cut end, the top surface adjacent said cut end being protected by said mask material;

painting the cut end to conceal the visual contrast between said first and second body portions thereat; and

thereafter peeling said mask material from the strip surface, thereby removing any excess end paint and providing a well defined edge between the painted end and the top surface of the strip.

4,358,483

GLASS CONTAINER SELECTED BASE COATING PROCESS

Robert E. Waugh, Columbus, Ohio, assignor to The D. L. Auld Company, Columbus, Ohio

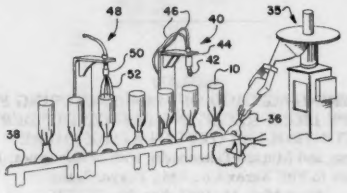
Filed Dec. 16, 1981, Ser. No. 331,048
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—287 **11 Claims**

1. A process for coating selected areas on the base of a glass container such as a soft drink bottle which comprises:

(a) providing one or more annular channels or a reservoir on the base of the container to be coated,

(b) mounting said container with said base directed upward with respect to the balance of said container,

(c) conveying said container to a plastic casting station comprising a nozzle means having a plurality of applicator tubes, said applicator tubes being aligned with the annular channels or reservoir on the base of said container,



(d) dispensing predetermined amounts of uncured plastic from a plurality of applicator tubes and into said channels or reservoir such that said amounts flow and meld and at least partially fill said channels or reservoir without coating said bearing surface,

(e) curing said plastic, and

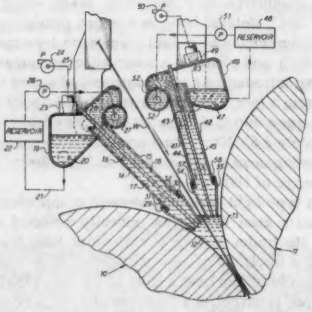
(f) conveying said containers from said casting station.

4,358,484

METHOD FOR HIGH SPEED SIZE APPLICATION

Robert J. Alheid, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Jan. 26, 1981, Ser. No. 228,262
Int. Cl.³ B05D *3/00*
U.S. Cl. 427—296 **6 Claims**



1. A method for the application of a sizing composition to a traveling web which comprises:

moving the web into tangential contact with a rotating roll,

delivering a sizing composition from a reservoir to the line of contact between said roll and said web to thereby form a coating pond of sizing composition at said line of contact confined between one side of said web and the periphery of said roll to thereby impregnate said one side of said web,

applying a reduced pressure to said pond to thereby remove some of the sizing composition from said pond during coating, and

recirculating the sizing composition withdrawn from said pond to said reservoir.

4,358,485

METHOD FOR FORMING A POROUS ALUMINUM LAYER

James W. Kern, Kenmore, and Tommy M. Tetreault, Grand Island, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 17, 1980, Ser. No. 131,012
Int. Cl.³ C23C 17/00
U.S. Cl. 427—376.8 6 Claims

1. A method for forming a porous aluminum surface on a substrate taken from the class consisting of aluminum and aluminum base alloys comprising:

(a) providing on said substrate a slurry composed of

(i) an aluminum powder matrix component selected from the group consisting of aluminum and aluminum base alloys, said matrix component having a melting point above about 1150° F.;

(ii) an aluminum metal bonding component selected from the group of aluminum alloys having 6.8% to 13% by weight silicon and being present in powder form and in quantities such that the weight ratio thereof to the matrix component (i) is between 0.15 and 0.35, said bonding component having a melting point lower than said matrix component;

(iii) an aluminum brazing flux consisting of potassium fluoaluminates complexes the weight ratio of the brazing flux to the matrix component (i) being in the range of 0.05 to 0.6 and the weight ratio of aluminum fluoride to potassium fluoride in the potassium fluoaluminates being between 1.00 and 1.50; and

(iv) an inert liquid vehicle;

(b) drying the slurry on the substrate at a temperature less than 300° F. to at least partially evaporate the liquid vehicle and form a dried metal powder coating on the substrate; and

(c) heating the coated substrate to a temperature in the range of from 1050° F. to 1200° F. for sufficient time to braze the metal coating to the substrate as the porous aluminum layer.

4,358,486

DENSIFICATION OF POROUS REFRACTORY SUBSTRATES

Glenn M. Ecord, and Calvin Schomburg, both of Houston, Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 22, 1981, Ser. No. 266,256
Int. Cl.³ B32B 7/02; B05D 3/02
U.S. Cl. 427—379 12 Claims

1. A method of densifying a porous refractory substrate comprising penetrating a surface of said substrate with a densifying agent comprised of a hydrolyzed tetraethyl orthosilicate, and heating said substrate at an elevated temperature and for a period of time sufficient to bond silica released from said densifying agent to said substrate.

2. The method of claim 1 wherein said substrate comprises silica fibers rigidized with a high purity silica binder.

3. The method of claim 2 wherein:

a. applying a first coating of said densifying agent to said substrate in an amount of about 0.25 cc/cm^2 of surface area;

b. heating said substrate to a temperature of about 260° F. for a period of time to bond silica released from said densifying agent to said substrate;

c. applying a second coating of said densifying agent to said substrate in an amount of about 0.25 cc/cm^2 of surface area;

d. heating said substrate to a temperature of about 350° F. for a period of time sufficient to bond silica released from said densifying agent to said substrate.

4,358,487

INFLATABLE ORNAMENT

S. David Walker, Overland Park, Kans., assignor to Satellite Balloon Manufacturing Co., Lenexa, Kans.

Filed Apr. 17, 1981, Ser. No. 255,135
Int. Cl.³ A47G 33/08
U.S. Cl. 428—11 21 Claims

1. A decorative ornament adapted to be suspended from a support, comprising:

a pair of flexible plastic sheets continuously joined together along their entire periphery to define a fluid inflatable envelope, said envelope having an opening therein;

valve means adjacent said periphery and communicating with said opening for selectively directing fluid through said opening into the interior of said envelope to inflate said envelope, said valve means being secured to one of said sheets adjacent the top of said envelope and including at least a portion thereof extending laterally outward from said one sheet to define a generally horizontal protection on said envelope; and,

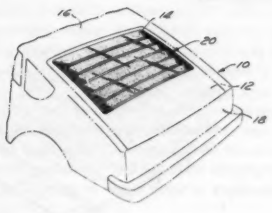
means connecting said portion of said valve means with said support for suspending said envelope from said support.

4,358,488

SIMULATED VEHICLE LOUVRE APPLIQUE

Hubbard L. Dunklin, Anaheim, Calif., and Larry E. Reeves, 5922 Hadrians Crescent, Anaheim, Calif. 92807, assignors to Larry Eugene Reeves, Anaheim, Calif.

Filed Jan. 9, 1981, Ser. No. 223,761
Int. Cl.³ G02B 27/00
U.S. Cl. 428—31 15 Claims



1. A sun screening device for use on a window of a motor vehicle comprising:

a thin flexible sheet formed to be applied in a generally contiguous orientation to the interior surface of said vehicle window, said sheet formed of a material adapted to reflect and dissipate incident sunlight falling on said sheet;

plural apertures formed through said sheet, said apertures sized to permit unimpaired vision through said sheet while maintaining a sufficient surface area for said sheet so that the majority of said incident sunlight falling on said sheet is screened from passage into the interior compartment of said vehicle; and

indicia formed on said sheet adapted to generate a visual image simulating a rigid, three-dimensional window lou-

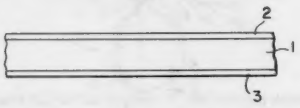
vre structure when viewed from the exterior of said vehicle and through said window.

4,358,489

MOUNTING TAPE

Alfred J. Green, Red Lion, Pa., assignor to Adhesives Research, Inc., Glen Rock, Pa.

Filed Feb. 27, 1981, Ser. No. 239,222
Int. Cl.³ B60R *13/00*; B32B *7/10*; C09J *7/02*
U.S. Cl. 428—31 **8 Claims**



1. A pressure sensitive adhesive laminate which initially resists a shear force of 1 kg. per ¼ at 125° F. for at least 200 hours comprising:

(a) a foamed layer selected from the group consisting of foamed poly-α-monoolefin, a foamed copolymer of an α-monoolefin copolymerized with minor amounts of another copolymerizable momoner and formed polyvinyl resin having bonded to at least one surface thereof,

(b) a layer of pressure sensitive adhesive comprising:

(i) 40 to 100 parts of a block copolymer of a monovinyl aromatic hydrocarbon and a conjugated diene or ethylene-butylene,

(ii) 30 to 80 parts of at least two distinct tackifying resins, and

(iii) 0.5 to 20 parts of at least one oxidation stabilizer and at least one silane adhesion promoter.

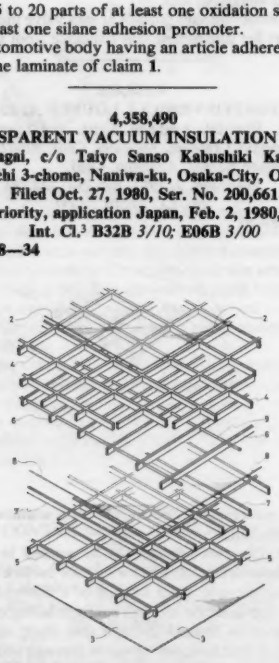
5. An automotive body having an article adhered thereto by means of the laminate of claim 1.

4,358,490

TRANSPARENT VACUUM INSULATION PLATE

Kiyoshi Nagai, c/o Taiyo Sanso Kabushiki Kaisha, 182-1, Motomachi 3-chome, Naniwa-ku, Osaka-City, Osaka, Japan

Filed Oct. 27, 1980, Ser. No. 200,661
Claims priority, application Japan, Feb. 2, 1980, 55-11794
Int. Cl.³ B32B *3/10*; E06B *3/00*
U.S. Cl. 428—34 **9 Claims**



1. A transparent vacuum insulation plate comprising:

two transparent outer plates defining an evacuated space therebetween;

at least two lattice structures lying in respective planes in said space between said outer plates, said planes wherein said lattice structures lie being parallel to the planes of said outer plates, each of said lattice structures comprising a plurality of members periodically positioned to form a geometrical pattern, said lattice structures being shifted relative to one another so that at least two neighboring lattice structures (1) do not have their patterns substantially aligned in a direction perpendicular to the planes of said lattice structures and (2) have their patterns crossing one another only at points periodically positioned in accordance with said geometrical pattern, said shifting of said lattice structures requiring that heat conduction from one lattice structure to a neighboring shifted lattice structure occur only at said crossing points and that a heat transfer component exist in a direction parallel to the planes wherein said lattice structures lie so that the total distance of heat conduction through said plate is greater than the perpendicular distance between said transparent outer plates; and,

a semi-transparent member positioned between two neighboring lattice structures, said semi-transparent member adapted to permit penetration of visible light therethrough but to filter the passage of infrared rays.

4,358,491

PROCESS FOR PRODUCING A HOLLOW VESSEL HAVING A FROSTED GLASS-LIKE SURFACE

Akiho Ota, Funabashi; Masanori Nishikawa, Isehara; Masao Hattori, Hatano; Akio Tsuboi, Otsu; Yoshihisa Hama, Otsu; Tadashi Okudaira, Otsu, and Shigeharu Sugihara, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha and Yoshino Kogyosho Co., Ltd., both of, Japan

Filed Aug. 29, 1978, Ser. No. 937,699
Claims priority, application Japan, Aug. 29, 1977, 52/103921
Int. Cl.³ B65D *23/00*; B29C *17/07*
U.S. Cl. 428—35 **6 Claims**

1. A process for producing a hollow vessel having a frosted glass-like surface which comprises molding a crystalline thermoplastic polyester copolymer comprising 80 to 95 mole % of ethylene terphthalate units and 20 to 5 mole % of units selected from the group consisting of isophthalic acid, neopentyl glycol and mixtures thereof, said polyester copolymer having an intrinsic viscosity of not less than 0.5, into a transparent parison, crystallizing at least the surface layer portion of the parison and then subjecting it to blow molding at a temperature at which biaxial stretching or expansion is realizable.

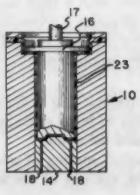
6. A hollow vessel having a frosted glass-like surface, produced by the process according to claim 1.

4,358,492

NOVEL PROCESS FOR DEEP STRETCH FORMING OF POLYESTERS

William G. Perkins, Cuyahoga Falls, and Clem B. Schriver, Clinton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 22, 1980, Ser. No. 199,139
Int. Cl.³ B32B *27/36*; B65D *1/00, 85/00*
U.S. Cl. 428—35 **6 Claims**



1. A biaxially oriented, hermetically sealable, hollow container prepared from high molecular weight polyester, said

polyester being a saturated linear polyester derived from C_6 to C_{10} aromatic dicarboxylic acids or the lower C_1 to C_4 dialkyl ester reactive equivalents and polyalkylene glycols of the general formula $HO(CH_2)_nOH$ where n is an integer ranging from 2 to 10, said polyester having an intrinsic viscosity ranging from about 0.5 to about 1.1 as measured in a 60/40 by volume mixed solvent of phenol and tetrachloroethane at 30° C., and a density of about 1.361 grams per cubic centimeter or less wherein the ratio of the weight in grams of the polyester to the inside volume of the container in cubic centimeters ranges from about 0.1:1.0 to about 0.01:1.0, a Gardner impact strength of at least 100 in-lbf, a volume shrinkage of 3.0 percent or less when subjected to temperatures ranging from about 90° C. to about 110° C., and a density ranging from about 1.364 to about 1.400 grams per cubic centimeter, said container made by stretching said polyester from about 4.0 to about 6.0 times in the axial direction and from about 2.0 to about 3.0 times in the hoop direction, and said container being stretched with a plunger, said plunger temperature ranging from about 60° C. to about 100° C. and said container being heat set.

4,358,493

CANS

Akira Ohtsuki; Hirokichi Ishino, and Hiromu Sakai; Takahiko Yamasoba; Susumu Tsuchiko; Yasuyuki Ishiwatari; Atsuhiro Yamamoto, all of Kyobashi, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1981, Ser. No. 229,407

Int. Cl.³ B65D *7/00*; B32B *7/02*; C09J *7/02*

U.S. Cl. 428—35 **15 Claims**

1. Cans prepared by bonding and/or seaming together the to-be-bonded portions of can materials with the aid of an adhesive inserted between said portions, wherein the adhesive consists of (1) at least one member selected from the group consisting of modified polyolefins which are carboxyl group-containing polyolefins and metal compound-incorporated carboxyl group-containing polyolefins and (2) a member selected from the group consisting of non-modified polyolefins and polyamides, and said adhesive is used in the form of a tape or coating material.

4,358,494

PROCESS FOR THE PREPARATION OF PAPER-BACKED ADHESIVE TAPES OF THE PRESSURE-SENSITIVE TYPE

Saburo Akimoto, Yokohama; Sachio Maruchi, Tokyo; Masahiro Fukaya, Chiba; Tomishi Shibano, Tama; Ippei Chimura, Kamakura; Hiroshi Asakura, Kamakura; Keisuke Kitazume, Kamakura, and Shiro Fuse, Kamakura, all of Japan, assignors to Sanyo-Kokusaku Pulp Co. and Toyo Chemical Co., Ltd., both of Kamakura, Japan

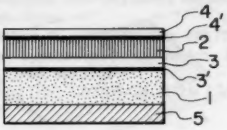
Filed Dec. 18, 1979, Ser. No. 104,865

Claims priority, application Japan, Dec. 21, 1978, 53/156826

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—40 **12 Claims**

1. A paper-backed adhesive tape of the pressure-sensitive type comprising a backing paper, a widthwise stretched film lap-sealed on one side of said backing paper through an adhesive layer, a release layer obtained by coating polyethylene on the surface of said film by extrusion, and a pressure-sensitive



adhesive layer laminated on the other side of said backing paper.

4,358,495

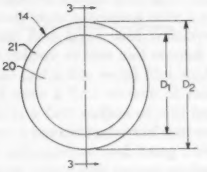
DRYWALL PATCH KIT

Robert F. Parker, Rte. 5, Box 350, Wilmington, N.C. 28401

Filed Apr. 6, 1981, Ser. No. 251,084

Int. Cl.³ B32B *29/00*

U.S. Cl. 428—66 **2 Claims**



1. A preformed laminate structure for patching and repairing damaged areas on previously installed drywalls, comprising:

(a) a backing member made from conventional, thin, drywall board cover paper material of uniform thickness adapted to be made pliable by dipping in water; and

(b) a facing member also made from said conventional thin, drywall board cover paper material adapted to be made pliable by dipping in water and having the same shape but of less size than the size of said backing member and centrally positioned on said backing member with one side of said facing member being cemented directly to one side of said backing member so as to have a uniform margin formed by the thickness of said backing member between the respective outer edges of said backing and facing members and an even thickness of material corresponding to the sum of the thicknesses of said backing and facing members in the area where said members are cemented together thereby permitting the laminate structure to be made pliable by dipping in water prior to application.

4,358,496

POULTRY MANURE PANEL AND METHOD OF MAKING SAME

John H. Kuipers, Holland, Mich., assignor to Agri Environment Systems, Inc., Hudsonville, Mich.

Filed Dec. 5, 1980, Ser. No. 213,336

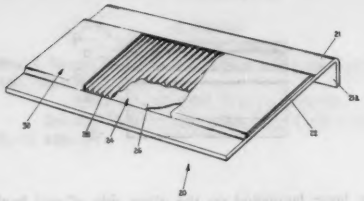
Int. Cl.³ B32B *3/28, 5/22, 5/26*

U.S. Cl. 428—72 **8 Claims**

1. An elongated panel for collecting poultry manure, the panel comprising:

a plurality of integrally joined laminae, each formed by laying down in succession a fiberglass batting and a layer of a thermosetting resin, catalyst and solvent mixture, said

laminae being subsequently cured to a hard, rigid mass; and



a flexible, preformed corrugated board consisting of a flat sheet of paperboard and a corrugated sheet of paperboard embedded in and between two of said laminae.

4,358,497

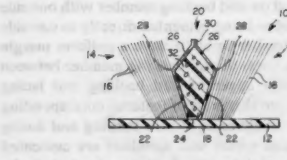
PILE WEATHERSTRIP HAVING A DIAMOND-SHAPED BARRIER FIN AND METHOD OF MANUFACTURE

Stanley R. Miska, Rochester, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Mar. 3, 1981, Ser. No. 239,894

Int. Cl.³ D04H *11/00*; E06B *7/22*

U.S. Cl. 428—85 **17 Claims**



1. A pile weatherstrip having a diamond-shaped barrier fin comprising:

a backing strip;

at least one sealing body having one surface portion thereof fixed to one face of said backing strip and extending longitudinally thereof and cooperating therewith for forming a sealing assembly, said sealing body extending from said one face and having an opposite free surface portion; and

a flexible barrier fin fixed adjacent one edge portion thereof to said sealing assembly, said fin comprising a pair of longitudinally extending leafs transverse to said one face, and a first fold line in each leaf defining a leaf portion extending outwardly from said backing strip and toward said other leaf portion, said leaf portions further being sealed together along a seal line to form a hollow fin of substantially diamond-shaped cross section.

4,358,498

REINFORCED LAMINATED AND CORRUGATED BOARD-LIKE STRUCTURES AND METHOD FOR THE MANUFACTURING THEREOF

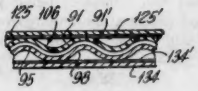
Marc A. Chavannes, 7356 Point of Rocks Rd., Sarasota, Fla. 33581

Continuation-in-part of Ser. No. 190,189, Sep. 24, 1980, which is a continuation of Ser. No. 913,242, Jun. 6, 1978, Pat. No. 4,228,209, which is a continuation of Ser. No. 771,993, Feb. 25, 1977, abandoned, which is a continuation of Ser. No. 551,978, Feb. 21, 1975, abandoned. This application May 12, 1981, Ser. No. 262,928

The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.

Int. Cl.³ B32B *3/28, 29/02*; B31F *1/24*

U.S. Cl. 428—108 **15 Claims**



1. A wire reinforced structure comprising a set of spaced parallel wires corrugated transversely of the length thereof and a web bonded to the crest portions of said wires on each side thereof, said spaced parallel corrugated wires being bonded to a paper web conforming to the corrugations of said wires.

14. The method of forming a wire reinforced material comprising the steps of bonding at least one set of spaced parallel wires to a web, corrugating said web and wires transversely of said wires and then bonding a second web to the crest portions of said corrugated wires on at least one side thereof.

4,358,499

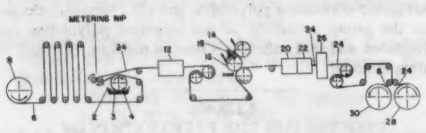
DIMENSIONALLY STABLE PVC ROOF MEMBRANE

Lawrence I. Hill, Toledo, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Dec. 18, 1980, Ser. No. 217,738

Int. Cl.³ B32B *27/08*; B44D *1/44*

U.S. Cl. 428—220 **1 Claim**



1. In a PVC roofing membrane having a thickness of from 20 to 80 mils, the membrane consisting essentially of:

(a) 100 parts of PVC

(b) 55 to 75 parts of plasticizer

(c) 0.1 to 10 parts of emulsifier

(d) 1 to 30 parts of filler

(e) 1 to 30 parts of heat and processing stabilizer; and

(f) 1 to 30 parts of UV stabilizer,

the improvement comprising the membrane being formed by casting and gelling a first layer of plastisol, then casting and gelling a second layer of plastisol on top of the first layer, then fusing both layers to produce a membrane which is elastic and flexible at minus 60° F. and has less than 1.5% shrinkage at 175° F. for six hours.

4,358,500

FLAME RESISTANT INSULATING FABRIC COMPOSITIONS CONTAINING INORGANIC BONDING AGENT

Stephen George, and Thomas George, both of Bronx, N.Y., assignors to Subtex, Inc., Hartsdale, N.Y.

Filed Aug. 20, 1981, Ser. No. 294,771
Int. Cl.³ B32B *7/00;* B05D *3/02*
U.S. Cl. 428—246 14 Claims

1. A heat resistant, flexible, refractory, insulating composition comprising:

(a) a porous base fabric;

(b) a refractory coating comprising refractory materials and a bonding agent, said refractory coating formed on the surface and interstices of said fabric and said refractory materials being capable of fusing with the porous base fabric at elevated temperatures; and

(c) a saturation coating formed on the outside surface of said refractory coating,

said bonding agent and said saturation coating being an inorganic composition comprising colloidal silica, monoaluminum phosphate and aluminum chlorohydrate.

4,358,501

STORAGE STABLE POLYOLEFIN COMPATIBLE SIZE FOR FIBER GLASS STRANDS

Chester Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 933,237, Aug. 14, 1978, abandoned. This application Mar. 3, 1981, Ser. No. 239,944
Int. Cl.³ D04H *1/58;* B32B *27/00, 27/12;* D04H *1/48*
U.S. Cl. 428—268 28 Claims

1. An article comprising a laminate of polyolefin and needled, continuous, glass fiber strand mat where the continuous glass fiber strands in the mat have integrity from the needling and the mat is impregnated throughout with the polyolefin polymer wherein said continuous glass fiber strands have present a dried residue of an aqueous non-peroxide-containing size composition applied during the formation of the continuous strands, where the aqueous size, comprises: an amino coupling agent, stabilizer, maleonated or acrylic modified amorphous polypropylene lubricant, non-crosslinkable film-forming polymer, and a self-reactive crosslinking film-forming polymer.

4,358,502

GLASS FIBER MAT FOR REINFORCING POLYAMIDES

Sidney G. Dunbar, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 14, 1981, Ser. No. 330,369
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—283 12 Claims

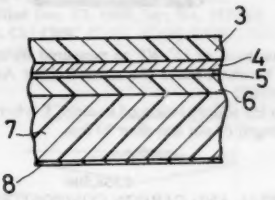
1. A bonded mat of randomly disposed, multifilament glass strands of indeterminate length especially adapted for use as reinforcement in stampable laminates of polyamide resin, where the individual glass filaments of said strands are sized with a mixture of an amine-functional organosilane and an amide reaction product of a fatty acid with an aliphatic polyamine, said reaction product having residual amine functionality, and where said strands are bonded to each other with a binder consisting essentially of the dried residue of an aqueous dispersion of emulsified polyurethane or epoxy resin having average particle size of at least about 0.6 μm and an amine-functional organosilane.

4,358,503

GLASS FIBRE REINFORCED PLASTIC SHEETING MATERIAL

Harald H. H. Homeyer, 356 Oak Ave., Ferndale, Randburg, Transvaal, South Africa

Filed Nov. 26, 1980, Ser. No. 210,710
Claims priority, application South Africa, Dec. 3, 1979, 79/6544; May 23, 1980, 80/3111
Int. Cl.³ B32B *15/08;* G02B *5/24;* B32B *17/04, 27/36*
U.S. Cl. 428—285 10 Claims



1. A molded, cured translucent, substantially rigid glass fiber reinforced plastic sheeting material, comprising:

a glass fiber reinforced plastic first layer; and

a reflective second layer extending over a major portion of an area of said first layer, said reflective second layer comprises a laminate of first and second films of flexible plastic material and a thin metal film, said thin metal film being applied onto a first surface of said first film and being bonded to a first surface of said second film by an adhesive layer, a second surface of said second film being incompletely polymerized and being chemically bonded to said first layer before said second surface of said second film is cured, said metal film being sufficiently thin so that said metal film is capable of transmitting a substantial quantity of visible light and is also capable of reflecting a substantial quantity of sun heat radiant energy.

4,358,504

FLAME RETARDANT ACTIVATED CARBON WEB

Gerald W. Gadbois, Rochester, N.H., and Peter D. Sutherland, Ellington, Conn., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed Jun. 5, 1981, Ser. No. 271,043
Int. Cl.³ D04H *1/58*
U.S. Cl. 428—288 4 Claims

1. A flame retardant activated carbon fibrous web material comprising a fibrous web containing at least 15 percent by weight activated carbon, said web being treated with a basic ammonium phosphate so as to retain at least about 5 percent by weight the phosphate based on the total weight of the web, the treated web being capable of retaining at least 80 percent of its adsorption efficiency and exhibiting a flame resistance of no after-glow and a char length of less than 10 cm. using test procedure TAPPI T-461.

4,358,505

INK ROLLER AND A METHOD OF PRODUCING THE SAME

Tsuneaki Narumiya; Take Sato, both of Yokohama, and Shigeru Iwasawa, Kamakura, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jan. 6, 1981, Ser. No. 222,842
Claims priority, application Japan, Jan. 10, 1980, 55-1651
Int. Cl.³ B29D *27/00*
U.S. Cl. 428—332 5 Claims

1. In an ink roller composed of a compression body, which is obtained by subjecting a flexible polyurethane foam to permanent deformation through compression in a certain direction, and having an axial direction coincident with the com-

pression direction of said compression body, the improvement wherein said compression body is formed by permanently deforming a flexible polyurethane foam having a three-dimensional skeletal reticulated structure and a pore size of 20–60 pores per linear centimeter at a compressibility of ⅓–1/15 and

has a hardness of 15°–60° as measured by an Ascar's C-type rubber hardness tester (Japanese Rubber Associate Standard SR 1S-0101).

2. An ink roller as claimed in claim 1, wherein said ink roller has a length of not less than 20 mm.

4,358,506

METAL AND CARBON COMPOSITES THEREOF

Josef Intrater, 125 Demarest Ave., Englewood Cliffs, N.J. 07632, and Gene Bertoldo, 306 W. 51 St., New York, N.Y. 10019

Continuation-in-part of Ser. No. 157,310, Jun. 9, 1980, abandoned. This application Oct. 24, 1980, Ser. No. 200,514

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—408 **15 Claims**

1. A composite comprised of at least the following component parts of:

(a) tin, lead, indium, a tin alloy, a lead alloy or an indium alloy in an amount from 60% to 99%, in combination with and, as a balance thereof, a metal which is a carbide or carbonyl former; and

(b) a carbon or a silicon structure,

wherein a bond between said components (a) and (b) is highly adherent and substantially void free, non-dewettable upon heat cycling, component (a) forms with a zero or negative angle of contact on component (b), an electrical resistance increase is substantially zero after the bond formation between components (a) and (b), and component (a) is capable of covering an entire surface of (b).

4,358,507

MULTI-LAYER REFLECTORS

Susumu Senaha; Suizo Kyo; Susumu Shimomura; Akira Akagami; Hiroshi Imai; Akiro Ohno; Shitomi Katayama, and Suguru Nomura, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd. and Yokohama Kiko Co., Ltd., both of Kanagawa, Japan

Filed Nov. 13, 1979, Ser. No. 93,564

Claims priority, application Japan, Nov. 13, 1978, 53-138904

Int. Cl.³ G02B *5/08;* **B32B** *17/10, 15/08*

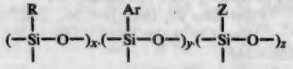
U.S. Cl. 428—429 **9 Claims**

1. A multi-layer coated reflector, having three or four layers, comprising a substrate capable of withstanding a vacuum deposition operation and a vacuum-deposited light-reflective metal layer, said reflector also including

(1) a resin layer consisting essentially of a silicone resin interposed between said substrate and said metal layer,

(2) a layer overcoated on said metal layer selected from the group consisting of a resin layer consisting essentially of silicone resin and an inorganic compound layer amorphous after deposition, with the proviso that where said inorganic compound layer is present, said reflector also includes a resin layer consisting essentially of a silicone resin interposed between said substrate and said metal layer, or

(3) a resin layer interposed between said substrate and said metal layer and a resin layer overcoated on said metal layer, at least one of said resin layers being flex resistant and consisting essentially of a thermosett silicone resin, where in each of (1), (2) and (3), said silicone resin is a high aryl-content silicone resin containing an aryl radical/(aryl radical+alkyl radical) mole percent of 65% to 100% wherein said silicone resin is obtained by curing condensing and polymerizing a polyaralkylsiloxane represented by the formula:



wherein R is a lower (carbon) alkyl radical; Ar is an aryl radical; Z represents a functional group which will condense to form a polymer and wherein in said polyaralkylsiloxane (1) the mole fraction of aryl radicals to the sum of the aryl and alkyl radicals is 0.65 to 1.00, the polymerizable functionality of 2 to 3 and the ratio of the number of carbon atoms to the number of silicone atoms is 4.25 to 16.

4,358,508

PROCESS FOR FORMING COATING FILM

Hiroyuki Tanaka; Fumito Aosai; Koichiro Kido, and Shogo Yamamoto, all of Nagoya, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

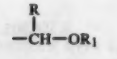
Filed Mar. 12, 1981, Ser. No. 243,062

Claims priority, application Japan, Mar. 19, 1980, 55-35425

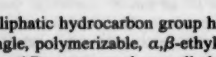
Int. Cl.³ B32B *15/08*

U.S. Cl. 428—458 **3 Claims**

1. A process for forming a coating film comprising coating, onto a substrate, a solvent type coating material prepared by blending a color pigment or combination of a metallic powder and a color pigment into a base resin containing a carboxylic acid amide copolymer as the main component, and 1–20 parts by weight of cellulose acetate butyrate resin per 100 parts by weight of the carboxylic acid amide copolymer, then coating a transparent thermosetting powder coating material thereon, and thereafter heating and curing them, wherein said carboxylic acid amide copolymer is one selected from the group consisting of: (A) a copolymer comprising 2–20% by weight of α,β-monoethylenic unsaturated carboxylic acid amide, 0.5–10% by weight of an α,β-unsaturated carboxylic acid having one or more carboxyl groups, 5–30% by weight of an unsaturated polyester resin and 92.5–40% by weight of other copolymerizable monomer, one hydrogen atom in its amide group being substituted by a group represented by the following formula:



wherein R represents hydrogen atom or alkyl group and R_1 represents hydrogen atom or organic group; and (B) a copolymer comprising 4–40% by weight of N-alkoxyalkyl-substituted amide represented by the following formula:



wherein R_2 is aliphatic hydrocarbon group having 2–6 carbon atoms and a single, polymerizable, α,β-ethylenic, unsaturated terminal group and R_3 represents lower alkyl group having 1–8 carbon atoms, 0.5–10% by weight of an α,β-unsaturated carboxylic acid having one or more carboxylic groups, 5–30% by weight of an unsaturated polyester resin and 90.5–20% by weight of other copolymerizable unsaturated monomer.

4,358,509

NOVEL METAL WORKING ADDITIVE COMPOSITIONS, LUBRICANTS CONTAINING THEM AND METAL WORKPIECES COATED WITH SAME

Joseph J. Rysek, Painesville, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 35,975, May 4, 1979, abandoned. This application Sep. 21, 1979, Ser. No. 77,878
Int. Cl.[3] B32B *15/08, 27/00*
U.S. Cl. 428—461 30 Claims

1. A metal working lubricant comprising a major amount of lubricating oil and a minor amount, effective to improve the rust inhibiting and extreme pressure properties thereof, of a composition comprising:

(A) A phosphorus-containing composition comprising at least one compound having the formula

$$(R^1\text{-}Ar^1OR^2O)_2POH$$

wherein:

Each R^1 is independently an aliphatic hydrocarbon-based radical having from about 4 to about 100 carbon atoms;

each R^2 is independently an ethylene, trimethylene, lower alkyl-substituted ethylene or lower alkyl-substituted trimethylene radical; and

each Ar^1 is independently an aromatic radical; and

(B) a chlorinated wax.

26. A metal workpiece having on its surface a film of a lubricant according to claim 1, 5, 6, 7, 11, 12 or 16.

4,358,510

METALLIC PAINTING

Satoru Ito; Tadashi Watanabe, and Shinji Sugiura, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Mar. 26, 1980, Ser. No. 134,140
Claims priority, application Japan, Apr. 5, 1979, 54-40305
Int. Cl.[3] B05D *3/02;* B32B *27/10;* B05D *1/36, 7/00*
U.S. Cl. 428—463 16 Claims

1. A process for forming a metallic paint film comprising:

(a) coating a substrate surface with a metallic paint containing as a vehicle component a modified vinyl-type graft copolymer obtained by graft copolymerizing 5–75 weight % of cellulose acetate butyrate with 95–25 weight % of a monomeric component consisting of one or more vinyl-type monomers, and

(b) then baking the paint film.

16. An article coated by the process of claim 1 or 2.

4,358,511

TUBE MATERIAL FOR SOUR WELLS OF INTERMEDIATE DEPTHS

Darrell F. Smith, Jr., and Edward F. Clatworthy, both of Huntington, W. Va., assignors to Huntington Alloys, Inc., Huntington, W. Va.

Filed Oct. 31, 1980, Ser. No. 202,742
Int. Cl.[3] B21C *37/06*
U.S. Cl. 428—595 5 Claims

1. As a new article of manufacture, an oil well tube having a yield strength at room temperature of at least about 110,000 psi, an elongation of at least 10%, together with resistance to environments containing hydrogen sulfide, chloride and water, as well as gaseous and/or liquid hydrocarbons made of an age hardened alloy consisting essentially of about 38% to 46% nickel, about 19.5% to 23.5% chromium, about 2.5% to about 3.5% molybdenum, about 1.5% to 3% copper, about 1% to about 2.5% titanium, about 0.1% to about 0.6% aluminum, the contents of aluminum and titanium being at least 1.3% and up to 3%, up to about 3.5% columbium, not more than 0.15% carbon and the balance essentially iron.

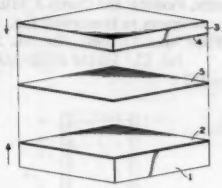
3. A wrought alloy consisting essentially of about 38% to about 46% nickel, about 19.5% to about 23.5% chromium, about 2.5% to about 3.5% molybdenum, about 1.5% to about 3% copper, up to about 3.5% columbium, about 1% to about 2.5% titanium, about 0.05% to about 0.6% aluminum, the contents of aluminum and titanium being at least about 1.3%, when columbium content is less than about 1.5%, but not exceeding about 3% not more than about 0.1% carbon and the balance essentially iron.

4,358,512

METAL-COMPOSITE BONDING

Mark A. Richter, West Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1980, Ser. No. 215,281
Int. Cl.[3] C03C *27/02, 27/04;* B32B *17/06*
U.S. Cl. 428—630 6 Claims



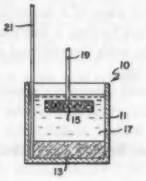
1. A bonded metal-composite material comprising a metal substrate bonded to a thermally stable high strength graphite fiber reinforced glass matrix composite by a bond comprising a eutectic alloy layer sandwiched between two layers of eutectic alloy metal components.

4,358,513

ELECTROCHEMICAL CELL AND NEGATIVE ELECTRODE THEREFOR

Thomas D. Kaun, New Lenox, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 29, 1981, Ser. No. 287,857
Int. Cl.[3] H01M *4/36*
U.S. Cl. 429—103 20 Claims



1. A negative electrode comprising a particulate mixture of lithium-aluminum alloy and electrolyte and a material selected from graphitized carbon, an aluminum-iron alloy or mixtures thereof, said lithium-aluminum alloy being present in the range of from about 45 to about 80 percent by volume of the negative electrode, said electrolyte being present in an amount not less than about 10 percent by volume of the negative electrode, said graphitized carbon being present in the range of from about 1 to about 10 percent by volume of the negative electrode, said aluminum-iron alloy being present in the range of from about 3 to about 10 percent by volume of the negative electrode.

11. A secondary electrochemical cell comprising a positive electrode and a negative electrode and an electrolyte, said positive electrode comprising an active material of a chalcogen or a transition metal chalcogen, said negative electrode comprising a particulate mixture of lithium-aluminum alloy and electrolyte and a material selected from graphitized carbon, an aluminum-iron alloy or mixtures thereof, said lithium-aluminum alloy being present in the range of from about 45 to

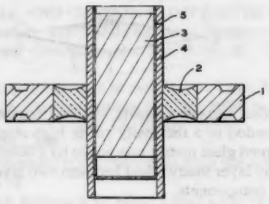
about 80 percent by volume of the negative electrode, said electrolyte being present in an amount not less than about 10 percent by volume of the negative electrode, said graphitized carbon being present in the range of from about 1 to about 10 percent by volume of the negative electrode, said aluminum-iron alloy being present in the range of from about 3 to about 10 percent by volume of the negative electrode, said electrolyte containing lithium ions providing ionic communication between said positive and negative electrodes.

4,358,514

HEADER DEVICE FOR ELECTROCHEMICAL CELLS

Kurt F. Garoutte, Furlong, and Curtis J. Michener, Harleysville, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 27, 1981, Ser. No. 248,093
Int. Cl.³ H01M 2/08, 2/32
U.S. Cl. 429—181 4 Claims



1. A hermetic sealing device for providing a hermetic seal between the header, terminal pin and body of an electrochemical cell, comprising:

a stainless steel header sized to hermetically fit the body and having an annualar opening therein;

an annular glass ring disposed in the annular opening in said header and bonded thereto;

a terminal pin disposed in the annular opening in said glass ring and bonded to said ring, said pin further comprising,

a solid central core of a material selected from nickel and nickel alloys having a thermal coefficient of expansion compatible with the thermal coefficient of expansion of said glass ring,

a stainless steel sleeve surrounding said core and bonded to said glass ring, said sleeve having a thickness of less than 0.01 inches, and

a nickel braze bonding said sleeve to said core.

4,358,515

PHOSPHORUS-CONTAINING SOLID STATE ELECTROLYTE

Ashok V. Joshi, Fishkill; Arun D. Jatkar, Goshen, both of N.Y., and William P. Sholette, Warminister, Pa., assignors to Ray-O-Vac Corporation, Madison, Wis.

Continuation of Ser. No. 200,277, Oct. 24, 1980, Pat. No. 4,298,664. This application Sep. 11, 1981, Ser. No. 301,126
Int. Cl.³ H01M 6/18
U.S. Cl. 429—191 4 Claims

1. A solid state electrochemical cell having an anode selected from the group of lithium and lithium rich alloys, a solid state electrolyte comprising, in mole percent, an interdiffused mixture of about 0.4% to about 16% of a material selected from the group of phosphorus triiodide, boron triiodide and mixtures thereof, about 33% to about 99% lithium iodide and up to about 60% alumina and a compatible cathode.

4,358,516

SODIUM ION CONDUCTOR, SOLID ELECTROLYTE STRENGTHENED WITH ZIRCONIA

Frederick F. Lange, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 16, 1981, Ser. No. 311,853
Int. Cl.³ H01M 10/39
U.S. Cl. 429—193 11 Claims

1. A ceramic comprising:

5 to 40 v/o ZrO_2 in the form of crystalline grains having a diameter less than about 2 μm and having a substantially tetragonal structure;

a rare earth oxide selected from the group consisting of Y_2O_3, CeO_2, Er_2O_3, and La_2O_3, there being at least enough of said rare earth oxide to increase the amount of ZrO_2 having a tetragonal crystal structure, but not enough of said rare earth oxide to form substantial amounts of said ZrO_2 having a cubic crystal structure; and

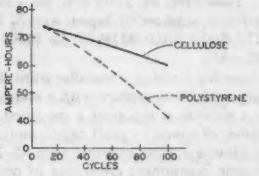
the remainder of said ceramic being substantially a sodium ion conductor solid electrolyte selected from the group consisting of β—Al_2O_3, β''—Al_2O_3, and $Na_{1+x}Zr_2Si_xP_{3-x}O_{12}$.

4,358,517

NICKEL-ZINC CELL

Richard A. Jones, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 202,205, Oct. 30, 1980, abandoned, which is a continuation of Ser. No. 89,378, Oct. 30, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 324,159
Int. Cl.³ H01M 6/04
U.S. Cl. 429—206 10 Claims



1. An alkaline nickel-zinc cell comprising in combination: a nickel electrode; a zinc electrode spaced from said nickel electrode; and an aqueous alkaline electrolyte permeating said zinc electrode and bridging the space between the electrodes; said zinc electrode comprising a conductive grid embedded in an active material mass, said mass comprising a substantially homogeneous mixture of (1) zinc-rich particles, (2) an additive selected from the group consisting of calcium oxide and calcium hydroxide particles for forming calcium zincate from said zinc-rich particles upon discharge of said cell, said calcium zincate being dissociable in high concentrations of said electrolyte, and (3) sufficient porous, wick-like, absorbent, hydrophilic fibers to so irrigate said mass with electrolyte as to maintain the concentration of said permeating electrolyte below the dissociation concentration of said calcium zincate.

4,358,518

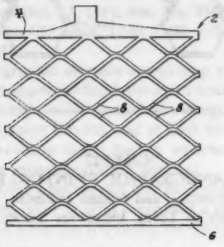
WROUGHT LEAD-CALCIUM-STRONTIUM-TIN (±BARIUM) ALLOY FOR BATTERY COMPONENTS

Robert C. Matter, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 153,333, May 27, 1980, abandoned. This application Mar. 3, 1981, Ser. No. 240,070
Int. Cl.³ H01M 4/68
U.S. Cl. 429—245 5 Claims

1. A lead-acid storage battery component comprising a

corrosion-resistant, lead based alloy having anti-recrystallization stability at temperatures up to at least 66° C. for periods of at least six months, said alloy consisting essentially of about 0.03 to about 0.04 weight percent calcium, about 0.15 to about



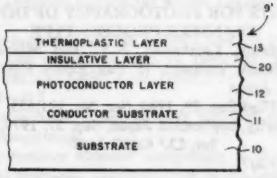
0.4 weight percent strontium, about 0.15 to about 0.9 weight percent tin, and lead, said alloy also containing barium in a concentration ranging from about 0.025 to about 0.07 weight percent when said alloy contains less than 0.3 percent by weight strontium and more than about 0.65 weight percent tin.

4,358,519

TECHNIQUE OF INTRODUCING AN INTERFACE LAYER IN A THERMOPLASTIC PHOTOCONDUCTOR MEDIUM

Kuo H. Chang, Minneapolis; Tzuo-Chang Lee, and Jacob W. Lin, both of Bloomington, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 5, 1977, Ser. No. 857,170
Int. Cl.³ G03G *5/10, 13/22;* B41M *5/20*
U.S. Cl. 430—2 **10 Claims**



1. A process for providing an insulative layer between a photoconductive layer and a thermoplastic layer of an improved alterable holographic thermoplastic-photoconductive recording medium comprising the steps of:

a - providing a substrate coated with a conductive layer which is overcoated with a photoconductive layer of trinitrofluorenone (TNF) doped polyvinyl carbazole (PVK);

b - providing a monomer vinyl carbazole (VK) solution;

c - adding an ultraviolet responsive initiator to the monomer VK solution for photopolymerization;

d - coating the photoconductive TNF-doped PVK layer with a layer of the monomer VK solution;

e - exposing the monomer VK layer to ultraviolet radiation causing the layer to polymerize to pure PVK while the layer is in liquid state; and,

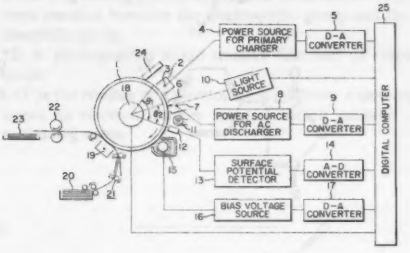
f - overcoating the pure PVK with a layer of a suitable thermoplastic material.

4,358,520

METHOD OF STABILIZING AN ELECTROSTATIC LATENT IMAGE

Kazuhiro Hirayama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 832,984, Sep. 13, 1977, abandoned. This application Mar. 23, 1979, Ser. No. 23,276
Claims priority, application Japan, Sep. 17, 1976, 51-111562
Int. Cl.³ G03G *13/22*
U.S. Cl. 430—54 **13 Claims**



1. A method of stabilizing an electrostatic latent image in the process of forming an electrostatic latent image on a photosensitive medium comprising a conductive layer, an insulating layer which does not become conductive by imagewise exposure, and a photoconductive layer interposed between said conductive and insulating layers and which becomes conductive by imagewise exposure through at least two kinds of charging steps, one of which is for sensitizing the photosensitive medium for image formation thereon, and the other of which is for forming a charge pattern in accordance with a light image, said method comprising the steps of measuring the dark region potential V_D and the light region potential V_L on the photosensitive medium, comparing the measurement values with a predetermined referential dark region potential V_{DR} and a predetermined referential light region potential V_{LR}, respectively, and when the differences between said V_D, V_L and said V_{DR}, V_{LR} are not within predetermined ranges, setting the amount of control for each of the charging steps to be controlled by control functions f(x,y) and g(x,y), respectively, in which the differences $x=V_{DR}-V_D$ and $y=V_{LR}-V_L$ are variables, and controlling the amount of charging during each charging step in accordance with said set amount of control.

4,358,521

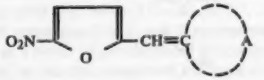
PHOTOCONDUCTIVE COMPOSITION WITH 5-NITROFURFURAL DERIVATIVE SENSITIZER

Syunichi Kondo; Hirotsugu Nomaguchi, and Hideo Sato, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

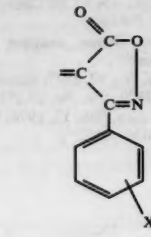
Filed May 8, 1981, Ser. No. 261,862
Claims priority, application Japan, May 8, 1980, 55-61157
Int. Cl.³ G03G *5/09*
U.S. Cl. 430—83 **6 Claims**

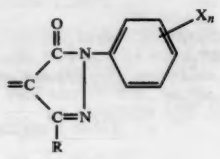
1. A photoconductive composition containing an organic photoconductive substance and a 5-nitrofurfural derivative represented by formula (1) in a photosensitizing amount

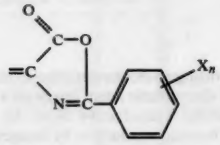
(1)

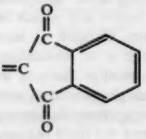


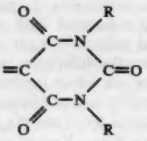
wherein A represents atoms which form, together with the carbon atom, a moiety selected from the group consisting of one of formulae (2) to (10)

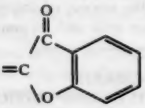


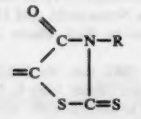


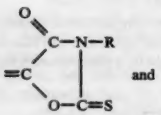




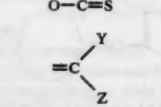


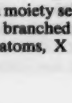






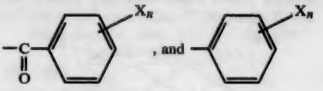
and





wherein R represents a moiety selected from the group consisting of a straight and a branched chain alkyl group containing from 1 to 12 carbon atoms, X represents a group having a Hammett σ value of at least 0.2, n is 0, 1 or 2, and Y and Z each

(2) represents a moiety selected from the group consisting of a cyano group, —COOR,



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(3) **4,358,522**

DRY PLANOGRAPHIC PRINTING PLATE

Takashi Fujita, Kusatsu, and Masao Iwamoto, Ohtsu, both of Japan, assignors to Toray Industries Incorporated, Tokyo, Japan

Continuation of Ser. No. 87,760, Oct. 24, 1979, abandoned. This application Aug. 17, 1981, Ser. No. 293,478

Claims priority, application Japan, Oct. 26, 1978, 53-131797; Feb. 19, 1979, 54-17263

(4) **Int. Cl.³ G03C *1/54, 1/60;* G03F *7/08***

U.S. Cl. 430—166 **6 Claims**

1. A negative working presensitized planographic printing plate for use in dry planography which comprises a base substrate; a photosensitive layer secured to and overlying said base substrate, said photosensitive layer containing a photosensitive orthoquinone-diazide compound which is a naphthoquinone-1,2-diazide-5-sulfonate of a novolak having a percent esterification as determined by IR spectrum in the range of between

(5) 44% and 65%; and a silicone rubber layer which is a sparsely cross-linked linear diorganopolysiloxane overlying said photosensitive layer through a bonding component which is an aminosilane of the formula $R_mR'_nSi(OR'')_{4-m-n}$ where R is an unsubstituted or monosubstituted amino group containing alkyl, R′ and R″ are each alkyl or aryl, m is 1 or 2 and n is 0 or 1, m+n being equal to 1 and 2.

(6)

4,358,523

FILM UNITS FOR PHOTOGRAPHY OF DIFFUSIVE TRANSFER PROCESS TYPE

Mamoru Ishiwata, Larchmont, N.Y., and Minoru Minoda,

(7) **Hadano, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

Filed Sep. 29, 1980, Ser. No. 191,623

Claims priority, application Japan, Sep. 27, 1979, 54-124935

Int. Cl.³ G03C *1/48*

U.S. Cl. 430—207 **4 Claims**

(8) 1. A film unit for photography of the diffusive transfer process type, which comprises a cover sheet and a photosensitive sheet, said photosensitive sheet including a plurality of laminated layers each taking part in a self-processing photographic function, said cover sheet and said photosensitive sheet having applied therebetween, a mask defining an image border definition with an aperture provided therein, a pod member containing therewith a processing liquid and being capable of releas-

(9) ing said processing liquid when subjected to pressure, a trap member capable of retaining therewith the surplus processing liquid after the diffusive transfer process, and a pair of spacers for use in regulating the thickness of the processing liquid to be discharged over said photosensitive sheet, the improvement

(10) wherein at least a partial portion of said photosensitive sheet underlying said image border definition comprises at least one dried dummy liquid layer extending inside or lying flush to a relative definition area corresponding to the image border definition which takes no part in the self-processing photographic function and which prevents the occurrence of stripes, black dots or black dashes in the periphery of the image area.

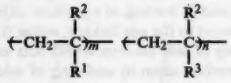
4,358,524
POLYMERIC VEHICLE FOR METALLIZABLE DYE IMAGE-RECEIVING LAYER

Richard C. Sutton; David P. Brust, and Lewis R. Hamilton, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,720
Int. Cl.³ G03C *1/40, 7/00, 5/54*
U.S. Cl. 430—213 **45 Claims**

1. In a photographic element comprising a support having thereon a dye image-receiving layer and a source of metal ions associated therewith, either in said dye image-receiving layer or in a layer adjacent thereto, and at least one photosensitive silver halide emulsion layer having associated therewith a metallizable dye image-providing material,

the improvement wherein said dye image-receiving layer or said adjacent layer or both comprises a cross-linked polymer derived from the following recurring units:



wherein:

R^1 is carbamoyl, 2-oxo-1-pyrrolidinyl or 2-hydroxyethoxycarbonyl;

each R^2 is hydrogen or methyl;

R^3 is an organic group having a reactive cross-linkable group;

m represents a weight percent of about 75 to about 99; and

n represents a weight percent of about 1 to about 25;

with the proviso that when R^1 is 2-hydroxyethoxycarbonyl, then R^3 is an organic group having a reactive cross-linkable group other than a hydroxyalkoxycarbonyl group.

4,358,525
BLOCKED PHOTOGRAPHICALLY USEFUL COMPOUNDS AND PHOTOGRAPHIC COMPOSITIONS, ELEMENTS AND PROCESSES EMPLOYING THEM

Jared B. Mooberry, and William C. Archie, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 949,462, Oct. 10, 1978, Pat. No. 4,310,612. This application Aug. 12, 1981, Ser. No. 292,095
Int. Cl.³ G03C *1/40, 1/48, 5/54, 1/10*
U.S. Cl. 430—217 **28 Claims**

13. A photographic image transfer film unit for forming a dye image comprising:

(a) a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith an immobile dye releasing compound; and

(b) a dye image-receiving layer; the film unit containing a blocked photographic reagent having the structure:

PR-G′-E-X-NuP

where:

PR-G′ is the residue of a photographic reagent, G′ being oxygen, sulfur, selenium, phosphorous or nitrogen;

E is an electrophilic group;

NuP is a precursor of a nucleophilic group which, under alkaline conditions, is converted uniformly to a nucleophilic group; and

X is a linking group for spatially relating E and NuP to enable them to undergo, after conversion of NuP to a nucleophilic group, an intramolecular nucleophilic displacement reaction which cleaves the bond between E and G′;

the blocked photographic reagent, under alkaline conditions encountered during processing of the silver halide emulsion layer, being uniformly unblocked, even if contacted with oxidized silver halide developing agent.

14. A photographic image transfer unit of claim 13 wherein

G′ is oxygen, sulfur or nitrogen;

G′-E is an ester moiety or an amide moiety;

NuP is a hydrolysis sensitive ester or amide which, under alkaline conditions, is hydrolyzed uniformly to a nucleophilic group;

X is an acyclic, carbocyclic or heterocyclic linking group; and

E and NuP are joined to positions on X to form a 3- to 7-membered ring during the intramolecular nucleophilic displacement reaction between the electrophilic group and the nucleophilic group.

15. A photographic image transfer film unit of claim 14 wherein

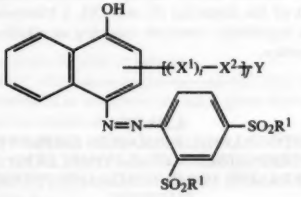
PR-G′ is the residue of a development inhibitor, a developing agent, an electron transfer agent, a bleach inhibitor or a nucleating agent.

4,358,526
PHOTOGRAPHIC LIGHT-SENSITIVE SHEET FOR THE COLOR DIFFUSION TRANSFER PROCESS

Shinsaku Fujita; Isamu Itoh; Shigetoshi Ono; Tooru Harada, and Yoshinobu Yoshida, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

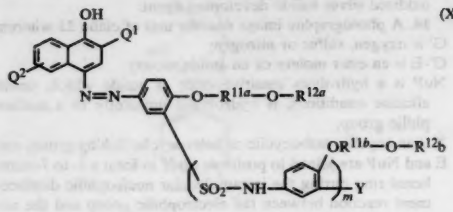
Continuation of Ser. No. 64,606, Aug. 7, 1979, abandoned. This application Aug. 18, 1981, Ser. No. 293,897
Claims priority, application Japan, Aug. 7, 1978, 53-96449
Int. Cl.³ G03C *1/40, 7/00, 1/10*
U.S. Cl. 430—223 **22 Claims**

1. A photographic light-sensitive sheet for the color diffusion transfer process which comprises a support having thereon at least one light-sensitive silver halide emulsion layer having associated therewith a compound represented by the following general formula:



(I)

wherein X^1 represents —J—NR^2— or —NR^2—J— wherein R^2 represents a hydrogen atom or an alkyl group, and J represents —SO_2— or —CO—; R^1 represents an alkyl group; X^2 represents —R^3—$(L)_k(R^4)_l$ wherein R^3 and R^4, which may be the same or different, each represents an alkylene group, or a phenylene group, L represents —O—, —CO—, —SO_2NH—, —CONH—, —$NHSO_2$—, —NHCO—, —SO_2—or —SO—, k represents 0 or 1, and l represents 1 when k is 1, or 1 or 0 when k is 0, provided that when X^2 bonds to X^1, X^1 bonds to R^3; i and j each represents 0 or 1; and Y represents a moiety which provides as a result of development processing under alkaline conditions, an azo dye compound having a different diffusibility from that of the azo dye image-forming compound represented by the formula (I), wherein said photographic light-sensitive sheet further contains a dye image-forming compound represented by the following formula (X):



(X)

wherein Q^1 represents a hydrogen atom, a halogen atom, a sulfamoyl group represented by the formula $—SO_2NR^{13}R^{14}$ wherein R^{13} represents a hydrogen atom or an alkyl group; R^{14} represents a hydrogen atom or R^{14a} wherein R^{14a} represents an alkyl group, an alkenyl group, a cycloalkyl group, an aralkyl group, an aryl group or a heterocyclic group; and R^{13} and R^{14} may combine directly or through an oxygen atom to form a ring; a group represented by the formula $—SO_2R^{15}$ wherein R^{15} represents an alkyl group or an aralkyl group; a carboxy group; a group represented by the formula $—COOR^{16}$ wherein R^{16} represents an alkyl group, or a phenyl group; or a group represented by the formula $—CONR^{13}R^{14}$ wherein R^{13} and R^{14} each has the same meaning as defined above; Q^2 is positioned at the 5- or the 8-position to the hydroxy group and represents a hydroxy group, a group represented by the formula $—NHCOR^{14a}$ or a group represented by the formula $—NHSO_2R^{14a}$ wherein R^{14a} has the same meaning as defined above; R^{11a} and R^{11b}, which may be the same or different, each represents an alkylene group having 2 or more carbon atoms provided that the two oxygen atoms in the $—O—R^{11a}—O—$ and $—OR^{11b}—OR^{12b}$ moiety are not connected to the same carbon atom; R^{12a} and R^{12b}, which may be the same or different, each represents an alkyl group, m represents 0 or 1; and Y represents a moiety which provides as a result of development processing under alkaline conditions, an azo dye compound having a different diffusibility from that of the azo dye image-forming compound represented by the formula (X).

19. The photographic light-sensitive sheet of claim 1, wherein said film unit comprises a support, an image-receiving layer, a substantially opaque light reflecting layer and one or more light-sensitive layers having associated therewith the compounds of the formulae (I) and (X), a transparent cover sheet and a rupturable container retaining an alkaline processing composition.

4,358,527

PHOTOGRAPHIC PRODUCTS EMPLOYING NONDIFFUSIBLE METAL-COMPLEXED AZO DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

Joseph Bailey, Bushey Heath; David Clarke, Watford, and Linda G. Johnston, Harrow, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1981, Ser. No. 324,214

Claims priority, application United Kingdom, Nov. 24, 1980, 8037643

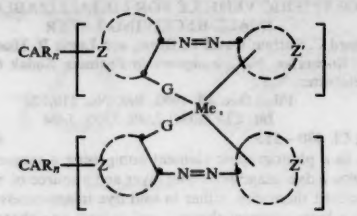
Int. Cl.³ G03C *1/40, 5/54, 1/10, 7/00*

U.S. Cl. 430—223 **33 Claims**

20. In a photographic assemblage comprising:

(a) a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material; and

(b) a dye image-receiving layer; the improvement wherein said dye image-providing material is a nondiffusible compound having at least one releasable azo dye moiety or precursor thereof, said compound having the following formula:



wherein:

(a) each Z independently represents the atoms necessary to complete an aromatic carbocyclic or heterocyclic nucleus having at least one ring of 5 to 7 atoms;

(b) each Z′ independently represents an aromatic carbocyclic or heterocyclic nucleus having at least one ring of 5 to 7 atoms, said Z′ having, in a position adjacent to the point of attachment to the azo linkage, either (i) a nitrogen atom in said ring of said nucleus which acts as a chelating site, or (ii) a carbon atom in said ring of said nucleus having directly attached thereto a nitrogen atom which acts as a chelating site;

(c) G is a metal chelating group;

(d) each CAR independently represents a ballasted carrier moiety capable of releasing said diffusible azo dye moiety or precursor thereof as a function of development of said silver halide emulsion layer under alkaline conditions;

(e) Me is a polyvalent, hexacoordinate metal ion; and

(f) each n is 0 or 1, with the proviso that at least one n is 1.

4,358,528

FORMATION OF BLACK-AND-WHITE SILVER-CONTAINING NEGATIVE IMAGES BY A DIFFUSION TRANSFER PROCESS

Yoshihiro Takagi, and Katsumi Hayashi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 94,396, Nov. 14, 1979, Pat. No. 4,309,499. This application Jun. 8, 1981, Ser. No. 271,334

Claims priority, application Japan, Nov. 14, 1978, 53-140099

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ G03C *1/06, 5/54, 1/48*

U.S. Cl. 430—251 **14 Claims**

1. In a method of forming black-and-white silver-containing negative image by a diffusion transfer photographic process using a black-and-white diffusion transfer photographic film unit comprising a plastic support, a silver halide photographic emulsion layer and an image-receiving layer, which unit is imagewise exposed, the improvement which comprises

(1) processing in a single processing solution comprising a solvent for the silver halide, a developing agent and a fogging promoting agent, whereby an optically negative image develops in said image-receiving layer, said silver halide photographic emulsion being an internal latent image type emulsion having no surface fog centers, and said silver halide solvent having a solubility for silver bromide of a 0.02 molar aqueous solution of about 2×10^{-5} to 5×10^{-3} mol/l at 60° C. and at the developing pH; and

(2) including a foggant in said photographic film unit.

4,358,529

PHOTOSENSITIVE REPRODUCTION ELEMENTS FOR FORMING NEGATIVE TONABLE IMAGES

Werner Abele, Neu-Isenburg, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 17, 1981, Ser. No. 274,558

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048490

Int. Cl.³ G03C *1/68, 1/727*

U.S. Cl. 430—270 6 Claims

1. Photosensitive nonsilver reproduction element for the preparation of negative tonable images comprising a support bearing a layer of a photosensitive composition which comprises

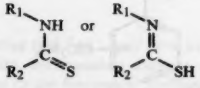
(1) at least one thermoplastic binder,

(2) a photosensitive system consisting essentially of

(a) at least one hexaarylbisimidazole compound;

(b) a dihydropyridine compound; and

(c) a thioamide, thiolactam or thiocarbanilic acid ester of the formula:



wherein R_1 and R_2 can be the same or different and can be H, alkyl of 1 to 4 carbon atoms and aryl of 6 to 10 carbon atoms; R_1 is aryl of 6 to 10 carbon atoms and R_2 is either oxyalkyl wherein alkyl is of 1 to 8 carbon atoms or thioaryl wherein aryl is phenyl, tolyl, naphthyl; and R_1 and R_2 when taken together can be members of a 5 to 7 membered heterocyclic ring which may contain oxygen, sulfur and nitrogen as additional heteroatoms; and optionally (3) a plasticizer.

4,358,530

PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATE PRECURSOR AND A METHOD FOR PREPARING A PRINTING PLATE THEREFROM

Keisuke Shiba, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 2, 1980, Ser. No. 193,319

Claims priority, application Japan, Oct. 2, 1979, 54/126970

Int. Cl.³ G03T *7/02;* G03C *1/73*

U.S. Cl. 430—273 26 Claims

1. A photosensitive lithographic printing plate precursor comprising, in sequence, a support having a hydrophilic surface, a non-silver photosensitive layer capable of producing an oleophilic image, and a photographic silver halide emulsion coating,

wherein said silver halide emulsion coating comprises silver halide grains with an average diameter not exceeding 0.7 micron and a compound represented by the formula (I)

$$R^1NHNHCOR^2 \quad (I)$$

wherein R^1 represents an aryl group and R^2 represents hydrogen, an aryl group, or an aliphatic group.

3. A method for preparing a lithographic printing plate comprising

(a) imagewise exposing a photosensitive lithographic printing plate precursor comprising, in sequence, a support having a hydrophilic surface, a non-silver photosensitive layer capable of forming an oleophilic image, and a photographic silver halide emulsion coating,

wherein said silver halide emulsion coating comprises silver halide grains with an average grain size not exceeding 0.7 micron and a compound represented by the formula (I)

$$R^1NHNHCOR^2 \quad (I)$$

wherein R^1 represents an aryl group, and R^2 represents hydrogen, an aryl group or an aliphatic group together with a poly(alkylene oxide) or a derivative thereof having a molecular weight of at least 600,

(b) subjecting said exposed plate to a first development with a first developer containing a dihydroxybenzene reducing agent and free sulfite ions having a concentration of at least 0.18 mol/l,

(c) fixing the developed photographic coating,

(d) uniformly exposing the thus-processed plate to radiation to which said non-silver photosensitive layer is sensitive,

(e) washing to remove said silver halide emulsion coating, and

(f) processing the plate with a second developer capable of developing said non-silver photosensitive layer to remove either the exposed areas or unexposed area with the radiation of said non-silver photosensitive layer to form an oleophilic image.

4,358,531

PHOTOGRAPHIC MATERIAL, PROCESS FOR THE PRODUCTION THEREOF AND PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES

Anita von König, Krefeld; Franz Moll, Leverkusen, and Lothar Rosenhahn, Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

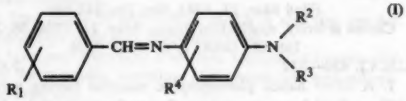
Filed Oct. 9, 1981, Ser. No. 309,972

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1980, 3039168

Int. Cl.³ G03C *1/34*

U.S. Cl. 430—434 8 Claims

1. Light-sensitive photographic material containing at least one light-sensitive silver halide emulsion layer and optionally other layers, wherein at least one layer contains a compound corresponding to the following general formula (I) in a quantity of at the most 10^{-2} mol per mol of silver halide:



(I)

wherein

R^1 represents H, OH or halogen;

R^2 and R^3, which may be the same or different, represent H, a substituted or unsubstituted alkyl group having from 1 to 4 carbon atoms or acyl;

R^4 represents H or alkyl having from 1 to 4 carbon atoms.

8. Process for the production of photographic images by image-wise exposure and development of the material according to claim 1.

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PHOTOGRAPHIC ELEMENT

Koichi Koyama, and Shinsaku Fujita, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

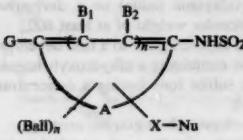
Filed Jul. 15, 1981, Ser. No. 283,412

Claims priority, application Japan, Jul. 15, 1980, 55-96339

Int. Cl.³ G03C *1/40, 1/10, 5/54, 7/00*

U.S. Cl. 430—505 13 Claims

1. A photographic element comprising a support having provided thereon at least one light sensitive silver halide emulsion layer, said silver halide emulsion layer containing a compound represented by formula (I)



wherein G represents —OR^1 or —NHR^2, R^1 represents hydrogen or a hydrolyzable moiety, R^2 represents hydrogen or an alkyl group containing from 1 to 50 carbon atoms, Z represents a photographically useful group, A represents an atomic group forming an aromatic ring, Ball represents an organic immobilizing group on the aromatic ring, which contains from 8 to 50 carbon atoms, m represents an integer of 1 or 2, X represents a divalent group, Nu represents a nucleophilic group, and n represents an integer of 1 or 2, and X with said nucleophilic group Nu is capable of forming a 5- or 12-membered ring by oxidation having an electrophilic center at the carbon atom substituted by the —$NHSO_2Z$ group and B_1 and B_2 each represents hydrogen or a substituent selected from the group consisting of an alkyl group containing from 1 to 7 carbon atoms.

3. A photographic element as in claim 1 comprising a support having provided thereon a red-sensitive silver halide emulsion-containing layer associated with a compound according to Formula (I) having a cyan image-providing moiety, a green-sensitive silver halide emulsion-containing layer associated with a compound according to Formula (I) having a magenta image-providing moiety, and a blue-sensitive silver halide emulsion-containing layer associated with a compound according to Formula (I) having a yellow image-forming moiety.

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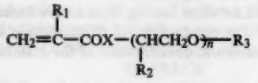
SILVER HALIDE PHOTOGRAPHIC MATERIAL

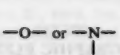
Kouji Tokitou, Hachioji, and Tsuneo Wada, Sagamihara, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Mar. 11, 1981, Ser. No. 242,490
Claims priority, application Japan, Mar. 11, 1980, 55/31150
Int. Cl.³ G03C *1/72, 1/06, 5/26*
U.S. Cl. 430—512 **7 Claims**

1. A silver halide photographic material having a hydrophilic colloid layer comprising fine polymer particles loaded with a hydrophobic photographic addenda provided on a support wherein the polymer of the polymer particles have repeating units formed from a nonionic hydrophobic monomer and a monomer having the formula [I]:

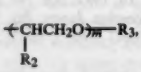


wherein X is



,

R_4 is an alkyl group or



R_1 and R_2 individually are a hydrogen atom or methyl group, R_3 is a hydrogen atom, an alkyl or aryl group, and m and n are integers of from 2 to 100 individually.

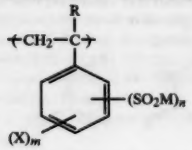
4,358,534

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT

Noboru Sasaki; Hidefumi Sera; Nobutaka Ohki, all of Minami-ashigara, and Jun Yamaguchi, Fujinomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1981, Ser. No. 315,557
Claims priority, application Japan, Oct. 27, 1980, 55/150548
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—537 **3 Claims**

1. A silver halide color photographic light-sensitive element comprising a support and at least one light-sensitive silver halide emulsion layer having a coupler incorporated therein and at least one light-insensitive hydrophilic colloidal layer, said light-insensitive hydrophilic colloidal layer containing from 0.01 to 99 wt% of a polymer comprising at least 0.1 mol% of a repeating unit represented by formula (I)



wherein R represents a hydrogen atom, an alkyl group containing from 1 to 6 carbon atoms, or a halogen atom; M represents a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, or an organic base group; X represents an alkyl group containing from 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, an alkylamino group having 1 to 6 carbon atoms, or a halogen atom; m represents 0, 1 or 2; and n represents 1 or 2.

4,358,535

SPECIFIC DNA PROBES IN DIAGNOSTIC MICROBIOLOGY

Stanley Falkow, Seattle, and Stephen L. Moseley, Kirkland, both of Wash., assignors to Board of Regents of the University of Washington, Seattle, Wash.

Filed Dec. 8, 1980, Ser. No. 213,803
Int. Cl.³ C12Q *1/70*
U.S. Cl. 435—5 **20 Claims**

1. A method for detecting the presence of a pathogen in a clinical sample suspected of containing said pathogen, said method comprising:

depositing said sample on an inert support;

treating said sample to affix genetic material of any of said pathogen present in said sample to said support in substantially single stranded form at substantially the same site on said support where said sample was deposited;

contacting said fixed single stranded genetic material with a labeled probe having a nucleotide sequence of at least about 25 bases at least substantially complementary to a nucleotide sequence of a structural gene characteristic of said pathogen, said contacting being under hybridizing conditions at a predetermined stringency; and

detecting duplex formation on said support by means of said label.

4,358,536

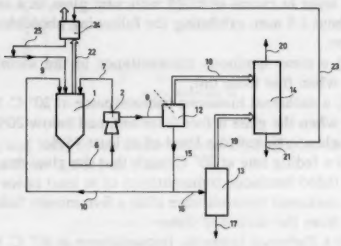
PRODUCTION OF ETHANOL

Conny R. Thorsson, Jarfalla, and Indrek J. Viira, Danderyd, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Filed Feb. 22, 1980, Ser. No. 123,716
Claims priority, application Sweden, Feb. 27, 1979, 7901738
Int. Cl.³ B01D *3/16*; C07C *29/80*; C12P *7/06*
U.S. Cl. 435—161 **14 Claims**

1. In the production of ethanol from a substrate containing carbohydrate, the method which comprises the continuous

steps of delivering the substrate to a fermentor to provide a fermenting liquor, feeding a flow of said liquor from the fermentor to a separating unit and there separating the liquor into a yeast concentrate flow and a yeast-free flow, recirculating said yeast concentrate flow to the fermentor, feeding said yeast-free flow to a simple evaporator unit and there separating it into a first ethanol-enriched vapor flow and a first liquid



bottom flow, treating said first vapor flow to produce ethanol of a desired quality, recirculating a major part of said first liquid bottom flow to the fermentor, feeding a minor residual part of said first liquid bottom flow to a stripping unit, and separating said residual part in the stripping unit into a second ethanol-enriched vapor flow and a second liquid bottom flow exhausted of ethanol.

4,358,537

IN SITU BIOLOGICAL BENEFICIATION OF PEAT IN THE PRODUCTION OF HYDROCARBON FUELS

David P. Chynoweth, St. Charles, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Oct. 22, 1980, Ser. No. 199,680
Int. Cl.³ C12P *5/02*
U.S. Cl. 435—162 **28 Claims**

1. A process for production of gaseous or liquid hydrocarbon fuel from peat comprising:

introducing an aqueous solution comprising hydrolysis promotion agent to a first zone of a natural peat deposit in situ at or near the surface of the earth and passing said aqueous solution through said first zone contacting said peat in said deposit forming in situ an active hydrolysis zone and hydrolyzing organic carbonaceous components of said peat to produce hydrolysis products;

passing said hydrolysis products and organic carbonaceous materials leached from said peat by said aqueous solution from said hydrolysis zone to a second zone adjacent said hydrolysis zone of said natural peat deposit forming in situ an active fermentation zone and fermenting a portion of said hydrolysis products to produce liquid fermentation products;

passing said liquid fermentation products, remaining hydrolysis products and organic carbonaceous materials leached from said peat by said aqueous solution out of said fermentation zone and out of said natural peat deposit by hydraulic means to an ex situ process for conversion to hydrocarbon fuel; and

converting said liquid fermentation products, remaining hydrolysis products and organic carbonaceous materials leached from said peat to said gaseous or liquid hydrocarbon fuel by conversion in a biological or chemical process accepting feeds having high water content.

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MYCOBACTERIUM FORTUITUM MUTANT

Merle G. Wovcha, and Kevin E. Brooks, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 931,741, Aug. 7, 1978, Pat. No. 4,293,646.
This application Sep. 8, 1980, Ser. No. 184,697
Int. Cl.³ C12N *1/20*
U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of mutant *Mycobacterium fortuitum* NRRL B-11358.

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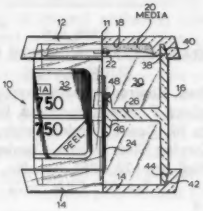
THROW-AWAY SUBCULTURING DEVICE

Gilbert S. Bittings, Baltimore, Md., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Mar. 20, 1981, Ser. No. 245,785
Int. Cl.³ C12M *1/20*; C12Q *1/24*
U.S. Cl. 435—301 **9 Claims**



1. A throw-away subculture device, characterized by

(a) a container defining an enclosure with a top opening and a bottom opening;

(b) a top cap for said top opening;

(c) a bottom cap for said bottom opening;

(d) a web spaced from said top cap dividing said enclosure into two chambers one of which defines a subculture area in said enclosure;

(e) at least one well and culture media in said top cap for cooperation with said subculture area;

(f) at least one absorbent fiber disc mounted adjacent said well for receiving inoculum introduced into said subculture area; and

(g) at least one needle mounted in said web and extending therethrough for introducing inoculum to said subculture area, the point of said needle extending toward said bottom cap.

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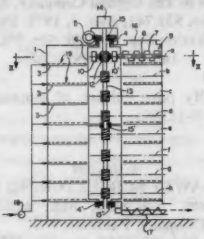
COMPOSTING APPARATUS

Kanichi Itoh, Yokohama; Yoshio Hirayama, Zushi, and Masanori Kodaira, Tokyo, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

PCT No. PCT/JP78/00006, § 371 Date Jun. 8, 1979, § 102(e) Date Jun. 7, 1979, PCT Pub. No. WO79/00216, PCT Pub. Date May 3, 1979
PCT Filed Oct. 9, 1978, Ser. No. 199,784
Claims priority, application Japan, Oct. 8, 1977, 52-121049
Int. Cl.³ C12M *1/02*
U.S. Cl. 435—316 **11 Claims**

1. A multistage composting apparatus comprising: a vertical cylindrical tank having a plurality of horizontal floors with apertures therein for allowing composting material to fall successively from one floor onto the floor below, each of said horizontal floors having at least one agitator unit having revolving beaters and said horizontal floors and said agitator units are supported for being rotatable relative to each other about the central vertical axis of said cylindrical tank, and means connected to said beaters for rotating said beaters at all times at a speed for scraping up the material lying in front of

said beaters and throwing the scraped material over and rearwardly of said beaters with respect to the advancing direction



of said units during relative rotation between said floors and said units.

4,358,541

GLASS-CERAMIC COATINGS FOR USE ON METAL SUBSTRATES

Ronald L. Andrus, Elmira; Kenneth Chyung, Painted Post, both of N.Y.; Richard F. Reade, deceased, late of Corning, N.Y., and by Clara M. Reade, administratrix, Flushing, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 23, 1981, Ser. No. 323,920

Int. Cl.³ C03C *3/22*

U.S. Cl. 501—5 **3 Claims**

1. Glass-ceramic coating compositions capable of being fired repeatedly to temperatures greater than 950° C. without undergoing thermal deformation, exhibiting coefficients of thermal expansion (25°–600° C.) between about 80–125×10⁻⁷/° C., and being substantially free from alkali metal oxides consisting essentially, expressed in terms of weight percent on the oxide basis, of:

	MgO	5–35
	CaO	0–35
	ZnO	0–25
CaO +	ZnO	10–35
	Al_2O_3	0–10
	B_2O_3	0–25
	P_2O_5	0–10
B_2O_3 +	P_2O_5	4–25
	SiO_2	25–50

4,358,542

PHOTOCHROMIC GLASS SUITABLE FOR MICROSHEET AND SIMULTANEOUS HEAT TREATMENT AND SHAPING

George B. Hares; David J. Kerko, and David L. Morse, all of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 8, 1981, Ser. No. 252,139

Int. Cl.³ C03B *23/025, 33/02;* C03C *3/08, 3/26*

U.S. Cl. 501—13 **6 Claims**

1. A photochromic glass composition consisting essentially, as analyzed in weight percent on the oxide basis, of

SiO_2—55–60
Al_2O_3—9–10
B_2O_3—19–20.5
Li_2O—2–2.5
Na_2O—2–3
K_2O—6–7
PbO—0.1–0.25
Ag—0.1–0.15
Cl—0.3–0.5
Br—0.05–0.15
CuO—0.0065–0.01

demonstrating long term stability against devitrification at temperatures corresponding to glass viscosities in the range of 10^4–10^6 poises, an opalization liquidus temperature-glass viscosity relationship such that phase separation does not occur as glass is drawn into sheet, excellent chemical durability, and the capability of being chemically strengthened to modulus of rupture values in excess of 30,000 psi with a depth of compression layer in excess of 0.025 inch, said glass, in a cross section of about 1.5 mm, exhibiting the following photochromic properties:

(a) a clear luminous transmittance in the vicinity of 90% when free from tint;

(b) a darkened luminous transmittance at 20° C. below 25% when the glass is free from tint, and below 20% when the glass is tinted to a level of at least 75%;

(c) a fading rate at 20° C. such that the glass demonstrates a faded luminous transmittance of at least twice that of the darkened transmittance after a five-minute fading interval from the darkened state;

(d) a darkened luminous transmittance at 40° C. below 45% when the glass is free from tint, and below 40% when the glass is tinted to a level of at least 75%; and

(e) a fading rate at 40° C. such that the glass demonstrates a faded luminous transmittance of at least 1.75 times that of the darkened transmittance after a five-minute fading interval from the darkened state.

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FLUORIDE GLASS

Nobuhiro Nozawa, Sagamihara, Japan, assignor to Kabushika Kaisha Ohara Kogaku Garasu Seizosho, Kanagawa, Japan

Filed Sep. 18, 1980, Ser. No. 188,486

Claims priority, application Japan, Oct. 4, 1979, 54/127315

Int. Cl.³ C03C *3/00*

U.S. Cl. 501—40 **1 Claim**

1. A fluoride glass having optical constants within ranges of Nd=1.410–1.455, νd=90–101, θgF=0.52–0.55 and $+\Delta\nu$d=26–37 and having a composition in weight percent (measured in terms of atom) of 0.3–4.5% P, 0.2–3.5% Si, 7–12% Al, 0–8% Y, 0–9% Ln (Ln representing a rare-earth element or elements), 0–3% As, 0–6% Sb, the total of said Al, Y, Ln, As and Sb being 7–28%, 0–4% Mg, 3.5–17% Ca, 5–20% Sr, 0–24% Ba, the total of said Mg, Ca, Sr and Ba being 17–41%, 0–1.5% Li, 0–5% Na, 0–5% K, the total of said Li, Na and K being 0.2–6%, 0–7% W, 42–54% F, 0–6% O, the total amount of the above-listed ingredients being 97–100%.

4,358,544

SINGLE PHASE GLASS COMPOSITIONS FOR USE IN PROTECTIVE AND LUBRICATING COATINGS FOR THE HEAT TREATMENT AND HOT WORKING OF METALS

Anthony N. Skedgell, Sutton Coldfield, England, assignor to Daniel Doncaster & Sons Limited, Sheffield, England

Filed Jul. 1, 1981, Ser. No. 279,539

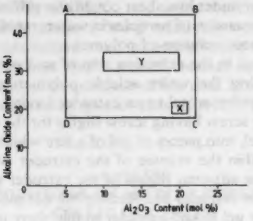
Claims priority, application United Kingdom, Jul. 4, 1980, 8021976

Int. Cl.³ B21B *45/02;* C03C *3/08*

U.S. Cl. 501—77 **4 Claims**

1. A glass composition which in the molten state forms only a single liquid phase and is suitable for use as a protective and lubricating coating in the heat treatment and hot forming of metals and alloys, the composition consisting essentially of the following alkaline oxides, CaO, Na_2O and K_2O and the following acidic oxides, B_2O_3, SiO_2 and Al_2O_3, the composition consisting essentially of the alkaline oxides in a total amount of from 18 to 45 mol %, from 5 to 22 mol % of Al_2O_3, the molar

ratio of $K_2O:(K_2O+Na_2O)$ in the range from 0.4:1 to 0.6:1, 48 to 52 mol % of the alkaline oxides being CaO, and the balance



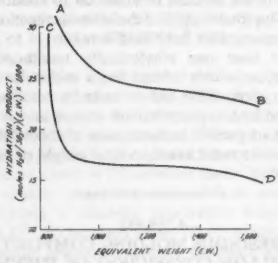
being B_2O_3 and SiO_2 in the molar ratio of $B_2O_3:(B_2O_3+SiO_2)$ in the range from 0.575:1 to 0.85:1.

4,358,545

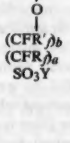
SULFONIC ACID ELECTROLYTIC CELL HAVING FLOURINATED POLYMER MEMBRANE WITH HYDRATION PRODUCT LESS THAN 22,000

Bobby R. Ezzell, Lake Jackson; William P. Carl, Angleton, and William A. Mod, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 11, 1980, Ser. No. 158,424
Int. Cl.³ C25B *1/16*
U.S. Cl. 521—27 **15 Claims**



1. A polymer comprising a substantially fluorinated backbone which has recurring pendant groups attached thereto and represented by the formula



where

a=0–3

b=0–3

a+b=at least 1

R_f and R_f' are independently selected from the group consisting of a halogen and a substantially fluorinated alkyl group having one or more carbon atoms

Y is hydrogen or an alkali metal

wherein the polymer has an equivalent weight of between 800 to 1500; has a hydration product of less than 22,000 and has sulfonic acid ion exchange groups only.

4,358,546

SPHERICAL POROUS CROSS-LINKED COPOLYMERS OF CHLOROMETHYLSTYRENE AND DIVINYLBENZENE AND THE DERIVATIVE THEREOF

Yamaguchi Naomi, Kawasaki; Noguchi Kohji, Yokohama, and Tsuzura Kazuo, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 28, 1980, Ser. No. 115,862
Claims priority, application Japan, Feb. 9, 1979, 54/13256
Int. Cl.³ C08F *2/44*
U.S. Cl. 521—32 **6 Claims**

1. A method of producing a porous cross-linked copolymer of chloromethylstyrene and divinylbenzene consisting essentially of polymerizing a monomer mixture containing about 9.0 percent by mole to about 17.0 percent by mole, based on the total moles of all the monomers, of divinylbenzene represented by Xm, about 80–1.39 Xm percent mole to about 98–1.71 Xm percent by mole, based on the total moles of all the monomers, of chloromethylstyrene, about 50 percent by weight to about 120 percent by weight, based on the total weight of all the monomers, of a water-insoluble organic medium selected from the group consisting of dioctyl phthalate, dibutyl sebacate, dibutyl azelate, dibutyl adipate, tributyl citrate, dihexyl sebacate, dihexyl azelate, dihexyl adipate, dioctyl sebacate, dioctyl azelate and dioctyl adipate, about 1 percent by weight to about 7.5 percent by weight, based on the total weight of all the monomers, of a linear polymer which is soluble in the monomers and the water-insoluble organic medium, the linear polymer being selected from the group consisting of polystyrene, polymethyl methacrylate and polyvinyl acetate, and removing unreacted components from the polymerized product.

4,358,547

NOVEL CATALYST SYSTEM FOR RIM ELASTOMERS

Michael Cuscurida, and Richard J. G. Dominquez, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 9, 1981, Ser. No. 309,963
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—126 **8 Claims**

1. In a method for making a RIM polyurethane elastomer of significantly improved properties wherein an aromatic polyisocyanate, a polyol of above about 500 equivalent weight, a chain extending agent comprising a low molecular weight active hydrogen containing compound of at least 2 functionality, a fast gelation organo tin catalyst and a delayed action gelation organo tin catalyst are injected via a RIM machine into a mold cavity of the desired configuration the improvement which comprises

using as the polyol an amine based polyol of at least 500 equivalent weight.

4,358,548

CELLULAR FORMING AGENT IN RESINOUS SYSTEMS AND RESULTING PRODUCTS

Glen W. Saidla, Stratham, N.H., assignor to Whitney & Company, Inc., Stratham, N.H.

Filed Jan. 14, 1980, Ser. No. 111,664
Int. Cl.³ C08J *9/08*
U.S. Cl. 521—128 **43 Claims**

1. The method of producing carbon dioxide in a base mass of synthetic resin composition comprising

dispersing a blowing agent consisting essentially of an organic isocyanate and an organic hydroperoxide in reactive quantities in said resin composition, and

allowing said isocyanate and hydroperoxide to react while said resin composition is in a fluid state, to produce said carbon dioxide;

the reactants being substantially free of water and other ingredients reactive with said isocyanate such that the preponderant gas-evolving reaction with said isocyanate is the reaction of said isocyanate with said organic hydroperoxide.

4,358,549
DENTAL FILLING COMPOSITION UTILIZING ZINC-CONTAINING INORGANIC FILLER

Ronald M. Randklev, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 184,916, Sep. 8, 1980, abandoned. This application Jul. 30, 1981, Ser. No. 288,289

Int. Cl.[3] **A61K** *5/01, 5/06, 6/08;* **C08K** *3/40*

U.S. Cl. 523—117 **8 Claims**

1. A dental filling composition comprising a polymerizable resin binder and a finely divided inorganic glass filler which is X-ray opaque and single phase, wherein said X-ray opaque inorganic glass filler consists essentially of, in percent by weight:

Zinc oxide	20 to 35%
Silica	45 to 65%
Boric oxide	3 to 15%
Aluminum oxide	0 to 10%
Aluminum fluoride	At least 2%
Alkali metal oxide or alkaline earth metal oxide	0 to 3%

wherein the combined weight of aluminum oxide and aluminum fluoride is at least about 10%, and wherein said glass exhibits an X-ray absorption characteristic of at least 1/16 inch.

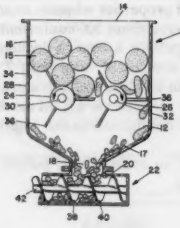
4,358,550
PROCESS FOR PREPARATION OF AQUEOUS SOLUTIONS OF WATER-SOLUBLE POLYMERS

Louis Jacono, Newark, and Thomas O. Mumper, Wilmington, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jul. 14, 1981, Ser. No. 283,243

Int. Cl.[3] **C08L** *101/00*

U.S. Cl. 523—348 **1 Claim**



1. An improved process for preparing dilute aqueous solutions of water-soluble polymer having an intrinsic viscosity of at least one deciliter per gram measured in 2 normal sodium chloride at 25.5° C. from gels of said polymer, said process comprising the steps of:

(a) extruding the water-soluble polymer gels into flowing water through die holes in an extrusion die plate, said die holes having diameters of from at least about 0.06 inch to about 0.50 inch, forming polymer gel strands,

(b) cutting the extruding polymer gel strands at the exterior surface of the extrusion die plate to a length of less than about 0.75 inch, forming a slurry of the cut gel particles in the flowing water,

(c) subjecting the slurry of gel particles of step (b) to high shearing forces immediately after formation of said slurry such that no substantial dissolution of the gel particles occurs prior to subjecting of said particles to said high shearing forces, said forces being sufficient to reduce the particle size of the cut gel particles to less than about 0.030 inch in greatest dimension, and

(d) mixing the resultant slurry of fine gel particles and additional water under low shear conditions sufficient to maintain the suspension of particles in water, rapidly forming a dilute aqueous solution of polymer,

the improvement in the extrusion step of said process, which comprises cutting the water soluble polymer gel, prior to feeding of the polymer gel to an extruder having a feed inlet, and an extruder screw having screw flights for the extruding of said polymer gel, into pieces of gel of a size which are at least containable within the volume of the extruder which can be defined between adjacent flights of the extruder screw at the feed inlet of said extruder and feeding the cut pieces of water soluble polymer gel to said extruder so that there is no substantial bridging of said polymer gel at the feed inlet of the extruder.

4,358,551
AQUEOUS AIR-DRYING CATIONIC EPOXY ESTER COATING COMPOSITIONS

David A. Shimp, Prospect, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 17, 1981, Ser. No. 284,165

Int. Cl.[3] **C08L** *63/02;* **C09D** *3/58, 5/08, 5/40*

U.S. Cl. 523—414 **11 Claims**

1. An air-drying coating composition comprising

(a) an aqueous solution of an acid salt of a resinous reaction product of an unsaturated fatty acid and an epoxy-amine adduct, said resinous reaction product having a titratable nitrogen content of about 0.3 to about 2 weight percent and no active amine hydrogen atoms; and

(b) metallic driers

wherein the unsaturated fatty acid is reacted with the epoxy-amine adduct in the amount of about 25 to about 50 weight percent based on total weight of the resinous reaction product, wherein the unsaturated fatty acid contains 16 to 22 carbon atoms and at least one ethylenically unsaturated group, wherein the epoxy-amide adduct has a molecular weight of about 1000 to about 3000 and is made by reacting glycidyl polyethers of dihydric phenols with amines and wherein the metallic driers are present in the amount of about 0.02 to about 0.5 weight percent metal based on total weight of the resinous reaction product.

4,358,552
EPOXY RESINOUS MOLDING COMPOSITIONS HAVING LOW COEFFICIENT OF THERMAL EXPANSION AND HIGH THERMAL CONDUCTIVITY

Makoto Shinohara, Crystal Lake, and James J. Miyashiro, Woodstock, both of Ill., assignors to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Sep. 10, 1981, Ser. No. 185,765

Int. Cl.[3] **C08L** *63/00*

U.S. Cl. 523—443 **10 Claims**

1. In an epoxy molding composition capable of conversion to a thermoset condition upon application of heat and pressure and suitable for encapsulating micro electronic devices, said composition comprising epoxy resin, hardener therefor and from about 40% to about 80% by weight based on total composition of filler, the improvement wherein from about 25% to about 100% by weight of the filler is an anisotropic, polycrystalline sintered ceramic product having cordierite as its primary phase and consisting essentially on an analytical oxide basis of 11.5 to 16.5% RO, 33 to 41% Al_2O_3 and 46.6 to 53% SiO_2 and having a coefficient of thermal expansion in at least one direction of less than 11.0×10^{-7} in./in./°C. over the range of 25° to 1000° C., and wherein RO consists essentially of one member selected from the group consisting of NiO, CoO, FeO, MnO and TiO_2, the NiO when selected being less than 25% by weight of the RO, the CoO when selected being less than 15% by weight of the RO, the FeO when selected being less than

40% by weight of the RO, the MnO when selected being less than 98% by weight of the RO, the TiO_2 when selected being less than 15% by weight of the RO, and the balance of the RO being substantially all MgO, said anisotropic polycrystalline sintered ceramic product being relatively non-abrasive and free of ionic contaminants and imparting to said epoxy molding composition a linear coefficient of thermal expansion below the glass transition temperature of less than 23×10^{-6}/°C. and a thermal conductivity greater than 25×10^{-4} cal./°C./cm./-sec.

4,358,553
COMPOSITIONS OF NITRILE RUBBER AND CELLULOSE ESTER

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed May 20, 1981, Ser. No. 265,302
Int. Cl.³ C08L 1/10, 1/14
U.S. Cl. 524—37 **15 Claims**

1. A composition comprising a blend of about 5–65 parts by weight of cellulose ester selected from the group consisting of cellulose propionate, cellulose butyrate, cellulose acetate propionate and cellulose acetate butyrate, and correspondingly, about 95–35 parts by weight of cured nitrile rubber in which the rubber is cured to the extent that no more than 25 weight percent of the rubber is extractable in a solvent in which uncured nitrile rubber is essentially completely soluble.

4,358,554
PROCESS FOR REPAIRING ASPHALT PAVEMENT

Tsoung Y. Yan, Philadelphia, Pa., and Costandi A. Audeh, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 45,480, Jun. 4, 1979, Pat. No. 4,278,469.
This application Feb. 10, 1981, Ser. No. 233,068
Int. Cl.³ C08L 95/00
U.S. Cl. 524—69 **4 Claims**

1. In a process for repairing and surfacing broken asphalt pavement which comprises heating and applying a fluid ductile asphaltic composition to a distressed pavement surface in a sufficient quantity to penetrate and fill void spaces, the improvement being said ductile asphaltic composition comprising a homogeneous blend of (1) between about 30–80 weight percent of an asphalt component selected from marginal asphalt materials having a viscosity penetration index lower than about 2.5×10^5; (2) between about 10–60 weight percent of a highly aromatic petroleum refinery residuum solvent component having a boiling range above about 650° F. and having a hydrogen content distribution in which the H_{Ar} proton content is between about 30 and 50 percent, the H_α proton content is at least 30 percent and the H_α/H_β proton ratio is above about 1.4; and (3) between about 1–20 weight percent of a polymeric component which is substantially asphalt-soluble; wherein the said asphaltic composition has a ring and ball softening point in the range between about 110°–185° F., a ductility of more than 100 centimeters at 77° F., and a penetration value in the range between about 70–300.

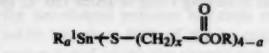
4,358,555
STABILIZERS FOR HALOGEN CONTAINING POLYMERS COMPRISING ALKYLTIN COMPOUNDS, ZINC MERCAPTOESTERS AND BASIC ALKALI OR ALKALINE EARTH METAL COMPOUNDS

Kenneth R. Molt, Cincinnati, Ohio, assignor to Carstab Corporation, Reading, Ohio

Filed Jun. 2, 1981, Ser. No. 269,082
Int. Cl.³ C08K 5/58
U.S. Cl. 524—181 **10 Claims**

1. A composition for stabilizing halogen containing polymers comprising:

A. at least one alkyltin mercaptide having the formula:



(I)

where

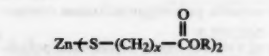
R^1 is C_1 to C_{12} straight or branched chain alkyl;

R is C_1 to C_{20} straight or branched chain, saturated or unsaturated alkyl;

a=1 or 2; and

x=1 or 2;

B. at least one zinc mercaptoester having the formula:



(II)

where x and R are as previously defined; and

C. at least one basic alkali or alkaline earth metal compound selected from the group consisting of oxides, hydroxides, sulfides, silicates, phosphates, borates and carbonates of alkali or alkaline earth metals.

7. A polymer composition stabilized against the deteriorative effects of heat comprising a halogen containing polymer and a stabilizingly effective amount of the composition of claim 1.

4,358,556
HIGH IMPACT, HIGH MODULUS FIBER REINFORCED AROMATIC CARBONATE POLYMERS

Petrus C. A. M. van Abeelen, Gilze, Netherlands, assignor to General Electric Company, Pittsfield, Mass.

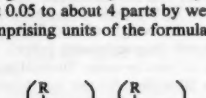
Filed Dec. 8, 1980, Ser. No. 214,010
Int. Cl.³ C08K 5/54
U.S. Cl. 524—267 **12 Claims**

1. A high impact strength, high modulus thermoplastic composition consisting essentially of per 100 parts by weight (a), (b) and (c), an intimate admixture of:

(a) from about 95 to about 35 parts by weight of an aromatic carbonate polymer of copolymer;

(b) from about 5 to about 65 parts by weight of fibrous reinforcing agent essentially free of any sizing agent; and

(c) from about 0.05 to about 4 parts by weight of hydrogen siloxane comprising units of the formula



wherein R is hydrogen, C_1–C_{10} alkyl, phenyl or a mixture of any of the foregoing, and n plus m is at least about 4.

4,358,557
FOUR COMPONENT HOT-MELT ADHESIVES

Brenda J. Boggs, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,659
Int. Cl.³ C08L 23/08, 31/04, 93/04, 91/06
U.S. Cl. 524—272 **10 Claims**

1. An adhesive composition capable of being used as a hot melt adhesive comprising a blend of

(a) about 10 to 20 percent by weight of at least one aromatic hydrocarbon resin having a softening point of less than 50° C.,

(b) about 30 to 40 percent by weight of at least one ethylene-vinyl acetate copolymer,

(c) about 35 to 55 percent by weight of at least one tackifier resin selected from the group consisting of hydrocarbon resin, polyterpene resin and rosin ester resin, and

(d) about 2.5 to 10 percent by weight of a paraffin wax having a Ring and Ball Softening Point of about 120° C. to 160° C.

4,358,558

ROOM TEMPERATURE CURABLE POLYORGANOSILOXANE COMPOSITIONS

Chiyuki Shimizu, Ota, Japan, assignor to Toshiba Silicones Ltd., Japan

Filed Dec. 23, 1981, Ser. No. 334,014
Claims priority, application Japan, Dec. 26, 1980, 55/186167
Int. Cl.³ C08K *5/05*
U.S. Cl. 524—379 **8 Claims**

1. A room temperature curable polyorganosiloxane composition comprising:

(A) 100 parts by weight of a silanol group-terminated polydiorganosiloxane having a viscosity at 25° C. of 100–200,000 cSt;

(B) 0.1–30 parts by weight of an aminoxy group-containing organosilicon compound containing an average of more than 2 organoaminoxy groups per molecule;

(C) 5–300 parts by weight of an inorganic filler, and

(D) 0.01–10 parts by weight of a monohydric unsaturated alcohol containing a carbon-to-carbon triple bond and a hydroxyl group bonded with a primary or secondary carbon atom.

7. A composition according to claim 1 wherein the inorganic filler (C) is calcium carbonate.

4,358,559

TACKY FLUOROELASTOMER COMPOSITIONS

Allen G. Holcomb, Mahtomedi, Minn., and Bruce H. Spoo, Baldwin, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 19, 1981, Ser. No. 322,970
Int. Cl.³ C08L *23/28, 23/32*
U.S. Cl. 524—380 **10 Claims**

1. A tacky fluoroelastomer gum stock composition, comprising a blend of:

(a) an elastomeric fluoropolymer gum, said gum being a copolymer of monomers comprising vinylidene fluoride and at least one other terminally ethylenically unsaturated fluorine-containing comonomer;

(b) from about 75 to about 750 parts by weight per one hundred parts by weight of said fluoropolymer gum, of a normally liquid fluoroaliphatic polyol, or a normally liquid mixture of two or more fluoroaliphatic polyols; and

(c) about 1 to 20 millimoles per one hundred grams of said fluoropolymer gum, of one or more organo-onium cocuring agent(s) selected from the group consisting of organoammonium, organoarsonium, organophosphonium, or organosulfonium compounds

which composition in reactive association with an acid acceptor forms a tacky curable gum stock composition which, upon exposure to heat, will cure into an elastomer.

4,358,560

STABILIZED SLURRIES OF ISOOLEFIN POLYMERS

Kenneth W. Powers, Berkeley Heights, and Ralph H. Schatz, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 63,253, Aug. 2, 1979, Pat. No. 4,252,710. This application Feb. 23, 1981, Ser. No. 236,719
The portion of the term of this patent subsequent to Feb. 24, 1998, has been disclaimed.
Int. Cl.³ C08K *5/01*
U.S. Cl. 524—468 **18 Claims**

1. A method of stabilizing a polymerization slurry against agglomeration, said slurry being formed in a cationic Lewis Acid catalyzed polymerization process, and containing as product polymers, polymerized C_4-C_7 isoolefin homopolymers or butyl rubber copolymers in a polymerization diluent selected from the group consisting of methyl chloride, methylene chloride, vinyl chloride or ethyl chloride diluents, which comprises incorporating into the reaction mixture, said reaction mixture containing monomers, catalyst and diluent, or into the polymerization product slurry about 0.05% to 20% by weight, based upon the weight of product polymers, of a stabilizing agent, said stabilizing agent being a preformed copolymer having a lyophilic, polymerization diluent soluble portion and a lyophobic, polymerization diluent insoluble portion, said lyophobic portion being soluble in or adsorbable by said product polymer and said stabilizing agent being capable of forming an adsorbed solubilized polymer coating around the precipitated isoolefin homopolymer or butyl rubber copolymer to stabilize said slurry.

4,358,561

INJECTION MOLDABLE AMIDE-IMIDE COPOLYMERS

Robert G. Keske, and James R. Stephens, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

PCT No. PCT/US81/00073, § 371 Date Jan. 7, 1981, § 102(e) Date Jan. 7, 1981, PCT Pub. No. WO81/02014, PCT Pub. Date Jul. 23, 1981
Continuation-in-part of Ser. No. 112,653, Jan. 16, 1980, Pat. No. 4,309,528. This PCT application Jan. 7, 1981, Ser. No. 245,642
The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.
Int. Cl.³ C08G *73/14*
U.S. Cl. 524—600 **33 Claims**

1. A process for the preparation of random linear injection moldable amide-imide and amide copolymers having an inherent viscosity of about 0.6 to 3.0 which process comprises reacting fully or partially acylated aromatic diamines with aromatic tricarboxylic acid anhydrides, aromatic dicarboxylic acids or mixtures of aromatic dicarboxylic acids and aromatic tricarboxylic acid anhydrides in a molar ratio of about 9:1 to about 1:9 at a temperature of about 150° to 750° F., and wherein the molar ratio of the diamines to the anhydride or acid, and anhydride mixture is about 0.9:1 to 1.1:1 and at least 50% of the amine functionality is acylated in the presence of C_2 through C_8 containing aliphatic acids or C_4 to C_{16} containing aliphatic anhydrides.

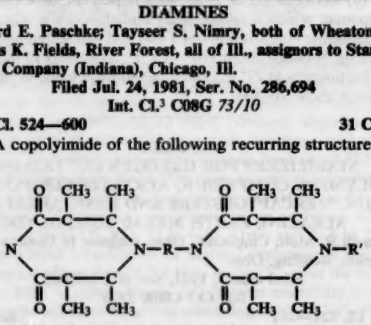
4,358,562

COPOLYIMIDES FROM TETRAMETHYLCYCLOBUTANE-1,2,3,4-TETRACARBOXYLIC DIANHYDRIDE AND A MIXTURE OF DIAMINES

Edward E. Paschke; Tayseer S. Nimry, both of Wheaton, and Ellis K. Fields, River Forest, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 24, 1981, Ser. No. 286,694
Int. Cl.³ C08G *73/10*
U.S. Cl. 524—600 **31 Claims**

1. A copolyimide of the following recurring structure



wherein R and R′ are different divalent aliphatic or aromatic hydrocarbon radicals.

4,358,563

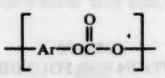
POLYCARBONATE COMPOSITION

Clayton B. Quinn, and William Hilakos, both of Mt. Vernon, Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Feb. 17, 1981, Ser. No. 235,113
Int. Cl.³ C08L 23/06, 23/12, 69/00
U.S. Cl. 525—146 6 Claims

1. A composition comprising

a. a high molecular weight polymer having as a repeating unit an aromatic carbonate



said polymer endcapped with

XR

wherein X is derived from an organic moiety having a single substituent reactive with the acidic hydrogen of a phenol or the chlorine of phosgene and R is selected from the group consisting of the hydrocarbyl portion of the following acids or acid chlorides; stearic, isostearic, palmitic, myristic, lauric, pelagronic, caproic, caprylic, oleic, linoleic and abietic in admixture with

b. about one to about ten parts of a polyolefin selected from the group consisting of polyethylene or polypropylene, said parts per 100 parts by weight of the polymer of section a.

4,358,564

PROCESS FOR CONTROLLING THE VISCOSITY DURING THE PREPARATION OF GRAFTED POLYETHYLENE AND ETHYLENE/ALPHA OLEFIN WAXES

William A. Ames, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1981, Ser. No. 268,455
Int. Cl.³ C08L 23/26, 51/06; C08F 255/02
U.S. Cl. 525—261 40 Claims

1. A process for the preparation of modified low viscosity polyethylene and ethylene/alpha-olefin copolymer waxes which comprises reacting an unmodified polyethylene wax or an ethylene/alpha-olefin wax containing 99 to 50 percent ethylene, said wax having a melt viscosity of 5 to 40,000 cp. at 150° C., an unsaturation of less than 0.1 percent, with about 0.5 to 25 weight percent of an unsaturated polycarboxylic component in the presence of a free radical source and in the presence of at least one viscosity stabilizer at a temperature of from 180° C. to 250° C. to prepare a modified wax having a saponification number of from about 4 to 250.

4,358,565

LUBE OIL ADDITIVE

Rudolf J. A. Eckert, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 31, 1980, Ser. No. 203,073
Claims priority, application United Kingdom, Nov. 16, 1979, 7939785
Int. Cl.³ C08F 255/02; C10M 1/32, 3/26, 5/20
U.S. Cl. 525—280 12 Claims

1. A modified hydrogenated star-shaped polymer comprising a poly-vinyl-aromatic nucleus and polymeric arms linked to said nucleus wherein said arms are selected from the group consisting of:

(i) hydrogenated homopolymers and hydrogenated copolymers of conjugated dienes;

(ii) hydrogenated copolymers of conjugated dienes and monoalkenyl arenes; and

(iii) mixtures thereof;

and wherein at least about 80% of the aliphatic unsaturation of the star-shaped polymer has been reduced by hydrogenation while less than 20% of the aromatic unsaturation has been reduced; and which star-shaped polymer has been grafted with a nitrogen containing polymerizable organic polar compound selected from the group consisting of piperidine, morpholine, piperazine, pyridine, pyrrolidone, pyrrole, benzopyrrole, quinoline, indole which are all alkenyl substituted and 2-methyl vinylpyridine and N-vinyl imidazole in the presence of a free radical polymerization initiator and wherein the number average molecular weight of each of said polymeric arms is from 5,000 to 150,000.

4,358,566

METHOD FOR CONTROLLING THE FUNCTIONALITY DISTRIBUTION OF LIQUID COPOLYMERS

Gary Ver Strate, Matawan, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 726,137, Sep. 24, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 941,154
Int. Cl.³ C08C 19/02; C08F 8/04
U.S. Cl. 525—339 2 Claims

1. A process for controlling the functionality of a macromolecule having a number average molecular weight from about 200 to 20,000 and having functional groups capable of being modified by a heterogeneous catalyst, which comprises modifying the functionality of said macromolecule with a heterogeneous catalyst wherein said catalyst has an average pore size smaller than the radii of gyration of the largest macromolecule fractions in that the smaller molecules enter the pores of the catalyst and their functional groups are modified and the larger molecules are less able to enter the catalyst pores and are not completely modified therein and wherein said functional groups are aldehyde, ketone and alkoxy hydroperoxides.

4,358,567

RESINS FOR HAIRDRESSINGS

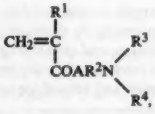
Kazuhide Hayama, and Kanji Narazaki, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

Filed Jan. 31, 1980, Ser. No. 117,289
Claims priority, application Japan, Feb. 6, 1979, 54-12380; Dec. 27, 1979, 54-173670
Int. Cl.³ C08F 8/18
U.S. Cl. 525—359.4 14 Claims

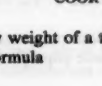
1. A resin for hairdressing obtained by a process which comprises:

copolymerizing, in a hydrophilic solvent, monomers of a monomer composition comprising:

25 to 45 percent by weight of a first monomer (1) represented by the formula



0 to 50 percent by weight of a second monomer (2) represented by the formula



5 to 65 percent by weight of a third monomer (3) represented by the formula

0 to 20 percent by weight of a fourth monomer (4) which is a hydrophilic ethylenically unsaturated monomer, and

0 to 20 percent by weight of a fifth monomer (5) which is an ethylenically unsaturated monomer other than the monomers (1) through (4),

the total content of the monomer (1) unit and the monomer (4) unit being 35 percent by weight at the least,

in which formulas: R^1 is a hydrogen atom or a methyl radical; R^2 is an alkylene radical having 1 to 4 carbon atoms; each of R^3 and R^4 is a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms; R^5 is an alkyl or alkenyl radical having 1 to 3 carbon atoms; R^6 is an alkyl or alkenyl radical having 4 to 24 carbon atoms or a cycloalkyl radical having 4 to 24 carbon atoms; and A is oxygen (O) or NH;

causing the copolymer thus formed to react in the state of a solution in a hydrophilic solvent with sodium or potassium monochloroacetate;

removing any precipitate formed as by-product; and,

subjecting the copolymer solution thus obtained to an ion-exchange resin treatment thereby to remove ionic impurities.

4,358,568

COPOLYMERS OF POLYARYLATES WITH POLYETHYLENE ARYLATES AND PROCESS FOR THEIR PREPARATION

Daniel W. Fox; Bruce A. Kaduk, and John B. Starr, Jr., all of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 16, 1980, Ser. No. 187,768
Int. Cl.³ C08L *67/02, 69/00*
U.S. Cl. 525—439 **4 Claims**

1. A process for the preparation of a copolymer which comprises reacting at a temperature of about 265°–270° C. for a period of about 60 minutes under a vacuum of less than one mm. mercury, or under an inert atmosphere, a mixture of (1) a high molecular weight polyethylene arylate having an intrinsic viscosity of at least about 0.5 dl/g and (2) a low or high molecular weight bisphenol A-isophthalate-terephthalate polyarylate or bisphenol A-isophthalate-terephthalate-carbonate polyarylate, said low molecular weight polyarylate having an intrinsic viscosity of about 0.1–0.3 dl/g and said high molecular weight polyarylate having an intrinsic viscosity of at least about 0.5–0.6 dl/g, in the proportion of 10 percent to 70 percent of (1) to 90 percent to 30 percent of (2), the resulting polymer being transparent, tough, soluble in chlorinated solvents, capable of maintaining its dimensional stability over a wide range of temperatures, and possessing a single glass transition temperature said intrinsic viscosity being as measured in a 60:40 mixture of phenol and tetrachloroethane at 25° C.

4,358,569

BLENDS OF COPOLYESTER-CARBONATE WITH POLYSULFONE

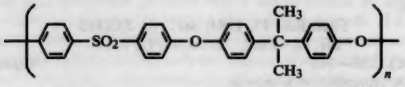
Clayton B. Quinn, Mt. Vernon, and Niles R. Rosenquist, Evansville, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 31, 1980, Ser. No. 221,704
Int. Cl.³ C08L *67/02, 81/06*
U.S. Cl. 525—439 **12 Claims**

1. A thermoplastic composition comprising a blend of:

(a) a random, thermoplastic copolyester carbonate; and

(b) a polysulfone whose repeating unit represented by the general formula:



wherein n has a value of from about 50 to about 80.

4,358,570

BINDER COMPOSITION FOR FOUNDRY SAND MOLDS

Takeshi Tobinaga, Yokkaichi, Japan, assignor to Mitsubishi Petrochemical Company Limited, Japan

Filed Sep. 16, 1980, Ser. No. 187,746
Claims priority, application Japan, Sep. 28, 1979, 54-125128
Int. Cl.³ C08G *18/76, 18/30*
U.S. Cl. 525—456 **9 Claims**

1. A binder composition for foundry sands comprising:

(a) a polyisocyanate;

(b) a polyol in a quantity such that said composition contains about 0.3 to 3 equivalents of isocyanate group per equivalent of hydroxyl group, and

(c) a compatibilizing agent in an amount of about 3 to 50 parts by weight per 100 parts by weight of the total weight of said polyisocyanate and said polyol, which is selected from the group consisting of nonylphenol, homoologomer of nonylphenol and formaldehyde, and a cooligomer of nonylphenol and up to 100 mol % based on the mols of nonylphenol in said cooligomer of a compound selected from phenol and cresol, in which cooligomer said nonylphenol, said compound, or said nonylphenol and said compound is condensed with formaldehyde.

6. A binder composition for foundry sands comprising:

(a) a polymethylene polyisocyanate which is a mixture of diphenylmethane diisocyanate and triphenylmethane triisocyanate;

(b) a polyol selected from an alkylene polyol and a polyether polyol having a hydroxyl equivalent not higher than 300, in a quantity such that said composition contains about 0.3 to 3 equivalents of isocyanate group per equivalent of hydroxyl group, and

(c) a compatibilizing agent in an amount of about 3 to 50 parts by weight per 100 parts by weight of the total weight of said polyisocyanate and said polyol, which is selected from the group consisting of nonylphenol, an oligomer of nonylphenol and formaldehyde, and a cooligomer of nonylphenol and up to 100 mol % based on the mols of nonylphenol in said cooligomer of a compound selected from phenol and cresol, in which cooligomer said nonylphenol, said compound, or said nonylphenol and said compound is condensed with formaldehyde.

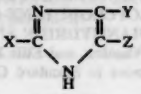
4,358,571

CHEMICALLY MODIFIED IMIDAZOLE CURING CATALYSTS FOR EPOXY RESIN AND POWDER COATINGS CONTAINING THEM

Marvin L. Kaufman, and George F. Salathe, both of Bridgewater, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 10, 1981, Ser. No. 242,216
Int. Cl.³ C08G *59/50;* C07D *233/60;* C09D *3/58*
U.S. Cl. 525—524 **15 Claims**

1. Curing agent for epoxy resins that comprise an imidazole having the formula:



wherein X is hydrogen, methyl, ethyl, or phenyl and Y and Z are hydrogen or methyl, modified by addition of C_1–C_{18} alkyl (meth) acrylate, by addition of a diglycidyl ether of a bisphenol, or a 1,2-monoepoxide or by carbamoylation; followed by neutralization with a lower fatty acid, or an aromatic monocarboxylic acid.

4,358,572

METHOD FOR THE PREPARATION OF NON-CRYSTALLINE POLYMERS OF HIGH MOLECULAR WEIGHT

Mark P. Mack, Ponca City, Okla.; Lewis B. Decker, Jr., and Adrian L. Wallace, both of Lake Charles, La., assignors to Conoco Inc., Ponca City, Okla.

Filed May 7, 1981, Ser. No. 261,339
Int. Cl.³ C08F *4/64, 10/14*
U.S. Cl. 526—142 **9 Claims**

1. A method for preparing non-crystalline, high molecular weight drag-reducing polymers comprising;

(a) a transition metal catalyst slurry containing

(1) at least 5% by weight, based on the total slurry of a crystalline titanium halide catalyst having the general formula TiX_n where n=2.5 to 3.0, and X is halogen,

(2) a hydrocarbon inert diluent, and

(3) from 0.01 to about 10.0 moles of an ether per mole of titanium together with,

(b) a co-catalyst wherein (a) and (b) are placed in contact with

(c) one or more α-monoolefinic hydrocarbons containing from 2 to 30 carbon atoms at temperatures of from about −25° to about 100° C. and pressures of from about atmospheric to about 1000 psig to obtain an ultrahigh molecular weight polymer which is soluble in a hydrocarbon diluent, wherein

(d) polymerization is ceased at a polymer content of 20% by weight or less based on total reactor content.

4,358,573

WAXY MALEIC ANHYDRIDE ALPHA OLEFIN TERPOLYMERS

Calvin J. Verbrugge, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed May 29, 1981, Ser. No. 268,432
Int. Cl.³ C08F *222/04*
U.S. Cl. 526—272 **7 Claims**

1. A terpolymer of from about 49–60 mole percent maleic anhydride, from about 10–40 mole percent of at least 1-alkene, having from 4–16 carbon atoms, and from about 40–10 mole percent of at least 1- alkene, having at least 18 carbon atoms.

4,358,574

PRODUCTION OF HYDROCARBON RESINS AND PRODUCTS RESULTING THEREFROM

Vincent L. Hughes, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 19, 1981, Ser. No. 226,039
Int. Cl.³ C08F *236/04*
U.S. Cl. 526—339 **3 Claims**

1. A hydrocarbon resin comprising from 40 to 50 weight percent units derived from piperylene, 15 to 20 weight percent units derived from 2-methylbutenes and the balance derived from other olefinic compounds having from 5 to 6 carbons, said 2-methylbutenes consisting essentially as the 2-methylbutene-2 isomer and the 2-methylbutene-1 isomer in a weight ratio of the former isomer to the latter isomer being greater than 10 whereby said resin has a softening point of at least 90° C.

4,358,575

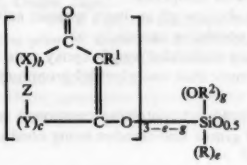
SELF-BONDING ONE-COMPONENT RTV SILICONE RUBBER COMPOSITIONS

Warren R. Lampe, Ballston Lake; Tyrone D. Mitchell, Albany, and James A. Cella, Clifton Park, all of N.Y., assignors to General Electric Company Silicone Products Business Division, Waterford, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,166
Int. Cl.³ C08G *77/06*
U.S. Cl. 528—17 **64 Claims**

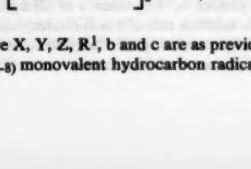
1. A self-bonding one-component RTV silicone rubber composition comprising (A) 100 parts by weight of an organopolysiloxane consisting essentially of chemically combined units of the formula,

and having terminal alkoxysiloxy units of the formula,



where R is a $C_{(1-13)}$ monovalent organic radical, R^1 is selected from hydrogen, halogen and R, R^2 is a $C_{(1-8)}$ alkyl radical, X and Y are divalent radicals selected from —O—, —S— and

Z is a divalent $C_{(1-13)}$ organic radical selected from alkylene, cycloalkylene, arylene and a fused ring structure, b and c are equal to 0 or 1, R^3 is selected from hydrogen and R, e is a whole number having a value of 0 or 1, g is equal to 1 or 2, and the sum of e+g is equal to 1 or 2; (B) from 0.1 to 5 parts by weight of an adhesion promoter of the formula,



where X, Y, Z, R^1, b and c are as previously defined and R^4 is a $C_{(4-8)}$ monovalent hydrocarbon radical.

4,358,576

ORGANOMETALLIC POLYMER AND PROCESS FOR PRODUCTION THEREOF

Seishi Yajima, Ibaraki; Kiyohito Okamura; Toetsu Shishido, both of Higashi, and Kazushige Fukuda, Kitakyushu, all of Japan, assignors to Kurosaki Refractories, Co., Ltd., Fukuoka and Seishi Yajima, Ibaraki, both of, Japan

Filed Apr. 15, 1981, Ser. No. 254,243
Claims priority, application Japan, Apr. 17, 1980, 55-49581
Int. Cl.³ C08G 77/22
U.S. Cl. 528—30 4 Claims

1. An organometallic polymer of which the main-chain skeleton consists of a Si-CH_2 bond and a V-O bond and which partly contains a vanadiosiloxane bond, the ratio of the number of silicon atoms to that of vanadium atoms being in the range of from 3:1 to 1000:1, the side-chain group directly bonded to the silicon atom being selected from the group consisting of hydrogen, methyl, ethyl and phenyl, and the vanadium atom being bonded to the silicon atom through an oxygen atom with substantially no side-chain organic group present which is directly bonded to the vanadium atom.

4,358,577

METHOD FOR PREPARING HIGH MOLECULAR WEIGHT EPOXY RESINS CONTAINING HYDROLYZED EPOXY GROUPS

Avis L. McCrary, and Michael G. Stevens, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 26, 1980, Ser. No. 210,472
Int. Cl.³ C08G 59/14, 59/62
U.S. Cl. 528—89 6 Claims

1. A process for preparing high molecular weight epoxy resin compositions containing one or more hydrolyzed glycidyl groups which process comprises:

(1) reacting in the absence of an inert organic solvent, a reaction mixture consisting essentially of

(A) at least one low molecular weight epoxy resin having an average of more than one glycidyl group per molecule with

(B) at least one hydroxyl-containing compound reactive with a glycidyl group; said reaction being conducted in the presence of

(C) a catalytic quantity of a catalyst for effecting the reaction between (A) and (B) and

(D) water in an amount in excess of that amount theoretically required to totally hydrolyze all of the epoxy groups of the epoxy resin produced from the reaction between (A) and (B); and

(2) removing the excess water thereby providing a high molecular weight epoxy resin containing at least one hydrolyzed glycidyl group.

4,358,578

PROCESS FOR REACTING A PHENOL WITH AN EPOXY COMPOUND

Thomas F. Brownscombe, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 24, 1981, Ser. No. 295,953
Int. Cl.³ C08G 59/68, 59/62
U.S. Cl. 528—91 9 Claims

1. A process for increasing the molecular weight of an epoxy compound which comprises reacting (1) an epoxy compound containing at least one vicinal epoxy group in the molecule with (2) a polyhydric phenol, in the presence of (3) a catalytic amount of a lithium or calcium salt of a non-nucleophilic acid selected from the group consisting of fluoroboric acid and perchloric acid in the presence of (4) a base.

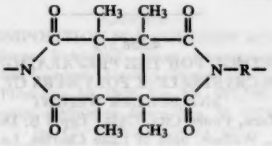
4,358,579

POLYIMIDES FROM TETRAMETHYLCYCLOBUTANE-1,2,3,4,-TETRACARBOXYLIC DIANHYDRIDE AND DIAMINES

Tayseer S. Nimry, Wheaton, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 24, 1981, Ser. No. 286,696
Int. Cl.³ C08G 73/10
U.S. Cl. 528—188 20 Claims

1. A polyimide consisting essentially of the following recurring structure:



wherein R is a divalent aliphatic, cycloaliphatic, araliphatic or aromatic hydrocarbon radical.

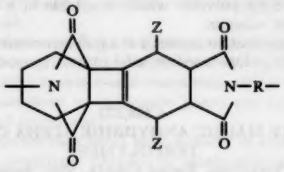
4,358,580

POLYIMIDES FROM TRICYCLO DODECANE-3,6-DIPHENYL-1,8,4,5-TETRACARBOXYLIC ACID DIANHYDRIDE AND TRICYCLO DODECANE TETRACARBOXYLIC ACID ANHYDRIDE

Tayseer S. Nimry, Wheaton, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 19, 1981, Ser. No. 294,348
Int. Cl.³ C08G 73/10
U.S. Cl. 528—188 37 Claims

1. A polyimide consisting essentially of the following recurring structure:



wherein R is a divalent aliphatic, cycloaliphatic, araliphatic, cycloaliphatic, araliphatic or aromatic hydrocarbon radical and Z is a hydrogen or benzene radical,

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4,358,581

POLYIMIDE MANUFACTURE

Richard F. Sutton, Jr., Circleville, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1980, Ser. No. 213,325
Int. Cl.³ C08G 63/10
U.S. Cl. 528—353 12 Claims

1. A process for manufacturing a high molecular weight polyimide comprising the steps of

(a) establishing a polymerization solution of

(i) polyamide acid prepolymer,

(ii) a finishing component polymerizable with the prepolymer to yield polyamide acid polymer, and

(iii) a conversion system to convert polyamide acid polymer to polyimide polymer, the temperature of the solution being maintained below the polyamidization temperature and

(b) warming the solution to cause polymerization of the prepolymer and the finishing component

whereby, as the prepolymer is polymerized with the finishing component, it is converted, by the conversion system, into high molecular weight polyimide.

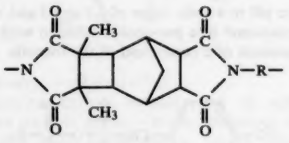
4,358,582

NOVEL NONAROMATIC DIANHYDRIDE AND POLYIMIDES FROM TRICYCLO [4.2.1.$0^{2,5}$] NONANE-3,4 DIMETHYL-3,4,7,8-TETRACARBOXYLIC ACID DIANHYDRIDE

Tayseer S. Nimry, Wheaton, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 19, 1981, Ser. No. 294,347
Int. Cl.³ C08G *73/10*
U.S. Cl. 528—353 **26 Claims**

1. A polyimide consisting essentially of the following recurring structure:



wherein R is a divalent aliphatic, cycloaliphatic, araliphatic or aromatic hydrocarbon radical.

4,358,583

EXTRACTION OF POLY(β-HYDROXY BUTYRIC ACID)

John Walker, Yarm, and Jonathan R. Whitton, Guisborough, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jul. 28, 1981, Ser. No. 287,807
Claims priority, application United Kingdom, Aug. 13, 1980, 8026460
Int. Cl.³ C08G *63/72*
U.S. Cl. 528—491 **8 Claims**

1. A process for the separation of poly(β-hydroxy butyric acid), PHB, from an aqueous suspension of bacterial cells containing PHB wherein the PHB-containing cells are contacted with an extraction solvent in which PHB is soluble and the solvent having the PHB dissolved therein is separated from the cell debris, characterised in that the bacterial cells in the aqueous suspension are caused to flocculate by the step of reducing the pH of the suspension to a value in the range 2 to 5 by treatment with an acid, in combination with at least one of the steps (i) treatment of the suspension with alkali to increase its pH to a value in the range 8 to 12 before acidification, and (ii) heating the suspension to a temperature within the range 50° to 200° C. before or after acidification, and then the flocculated cells are separated from the aqueous medium prior to contact of the cells with the extraction solvent.

4,358,584

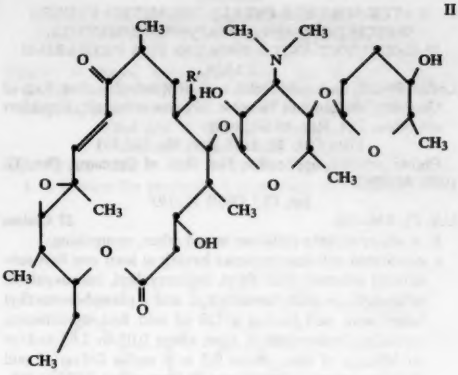
ANTIBIOTICS A6888C AND A6888X

Stephen M. Nash, Greenwood; Kay F. Koch, North Salem, and Marvin M. Hoehn, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 41,580, May 23, 1979, Pat. No. 4,252,898. This application Sep. 22, 1980, Ser. No. 189,439
Int. Cl.³ C07H *17/08*
U.S. Cl. 536—7.1 **3 Claims**

1. An antibiotic compound of the formula:

II



wherein:
(a) R′ is

and
(b) R′ is —CH_2OH;
or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

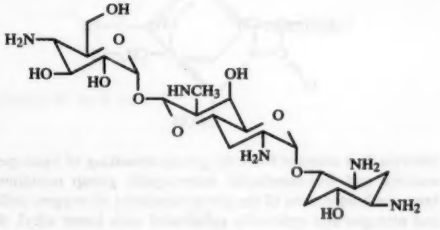
4,358,585

5-DEOXYAPRAMYCIN

Kikuo Igarashi, Itami; Tsunetoshi Honma, Ikoma, and Tamio Sugawara, Mino, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Oct. 22, 1981, Ser. No. 313,972
Claims priority, application Japan, Oct. 24, 1980, 55/149821
Int. Cl.³ C07H *15/22*
U.S. Cl. 536—16.8 **1 Claim**

1. 5-Deoxyapramycin represented by the following formula and the pharmaceutically acceptable acid addition salts thereof



4,358,586

DETECTION AND ISOLATION OF ENDORPHIN MRNA USING A SYNTHETIC OLIGODEOXYNUCLEOTIDE

Harvey Rubin, 2560 First Ave., San Diego, Calif. 92103

Filed Dec. 23, 1980, Ser. No. 219,435
Int. Cl.³ C07H *21/04*; C12N *15/00*
U.S. Cl. 536—27 **2 Claims**

1. As a composition of matter, a 15 base oligodeoxynucleotide having the sequence CATxAAyCCyCCGTA wherein "A" represents adenine, "T" represents thymine, "G" represents guanine, "C" represents cytosine, "x" represents guanine or adenine, and "y" represents guanine, thymine, cytosine or adenine.

4,358,587

WATER-SOLUBLE CELLULOSE MIXED ETHERS WHICH CONTAIN A PHOSPHONOMETHYL SUBSTITUENT AND A PROCESS FOR PREPARING SAME

Lothar Brandt, and Arno Holst, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 20, 1981, Ser. No. 313,351

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039963

Int. Cl.³ C08B *11/193*

U.S. Cl. 536—90 **21 Claims**

1. A water-soluble cellulose mixed ether, comprising:

a substituted cellulose material having at least one first substituent selected from alkyl, hydroxyalkyl, carboxyalkyl, sulfoalkyl, or dialkylaminoalkyl, and a phosphonomethyl substituent, and having a DS of said first substituents, excluding hydroxyalkyl, from about 0.05 to 2.95 and/or an MS_{Halk} of from about 0.5 to 6 and a DS_{PM} of said phosphonomethyl substituent of from about 0.005 to 0.8.

4,358,588

PROCESS FOR PREPARING CEPHALOSPORANIC ACID COMPOUNDS

Peter W. Henniger, Leiden; Johannes K. van der Drift, Delft; Gerard J. van Veen, Pijnacker, and Jagdish C. Kapur, Delft, all of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

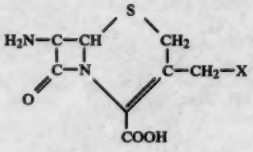
Continuation-in-part of Ser. No. 937,988, Aug. 30, 1978, abandoned. This application Oct. 3, 1980, Ser. No. 193,801

Claims priority, application European Pat. Off., Aug. 11, 1978, 78200140.8

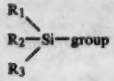
Int. Cl.³ C07D *501/06*

U.S. Cl. 544—030 **13 Claims**

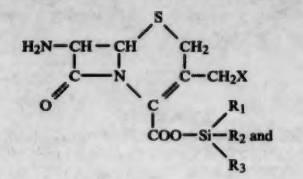
1. A process for the preparation of [D-α-amino-p-hydroxyphenylacetamido]-cephalosporanic acid compound comprising reacting a compound having the formula

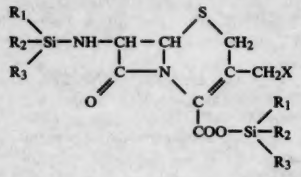


wherein X is selected from the group consisting of hydrogen, acetoxy and five-membered heterocyclic group containing least one hetero atom of the group consisting of oxygen, sulfur and nitrogen and optionally substituted with lower alkyl, the residue being attached to the 3-CH_2 group via sulfur atom and wherein a NH radical if present has optionally been silylated with at least one mole equivalent of a silylating agent producing

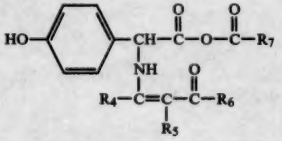


wherein R_1, R_2 and R_3 are individually selected from the group consisting of lower alkyl, benzyl, cycloalkyl and phenyl in an inert anhydrous, organic solvent to form a compound having a formula selected from the group consisting of





adjusting the pH to a scale value of 5.5 to 7.5 and reacting the resulting compound in a pre-cooled solution with an at least equimolar amount of a compound of the formula



wherein R_4 is lower alkyl, R_5 is selected from the group consisting of hydrogen and lower alkyl and R_6 and R_7 are lower alkoxy, in an inert, water-insoluble organic solvent.

4,358,589

NEMATIC LIQUID CRYSTAL COMPOUNDS

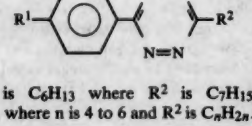
Herrmann Schubert, Nehlitz; Dietrich Demus, Halle; Horst Zaschke, Halle; Frank Kuschel, Halle; Gerhard Pelzl, Halle; Hans-Ulrich Nothnikz, Hoyerswerda, and Willibald Schliemann, Halle, all of German Democratic Rep., assignors to Veb Werk fur Fernsehelektronik im Veb Kombinat Mikroelektronik, Berlin-Oberschoneweide, German Democratic Rep.

Continuation of Ser. No. 9,046, Feb. 2, 1979, abandoned. This application May 7, 1980, Ser. No. 147,088

Int. Cl.³ C09K *3/34*; G02F *1/10*; C07D *257/08*

U.S. Cl. 544—179 **11 Claims**

1. A compound of the formula



wherein R^1 is C_6H_{13} where R^2 is C_7H_{15} and R^1 is $C_nH_{2n+1}O$—, where n is 4 to 6 and R^2 is C_nH_{2n+1}— where n is 4 to 7.

4,358,590

6-CARBOXY- AND 6-(ω-CARBOXYALKYL)-3-MERCAPTO-4-AMINO-1,2,4-TRIAZIN-5(4H)-ONES

Richard H. Wiley, 8 Roosevelt Cir., Palo Alto, Calif. 94306

Filed Feb. 26, 1981, Ser. No. 238,480

Int. Cl.³ C07D *253/06*

U.S. Cl. 544—182 **6 Claims**

1. 6-ω-Carboxyalkyl)-3-mercapto-4-amino-1,2,4-triazin-

5-ones in which the ω-carboxyalkyl group has the formula $HOOC(CH_2)_n$-with n having a value of one to four.

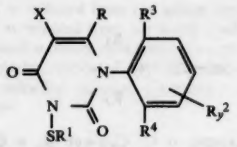
4,358,591

1-PHENYL-3-POLYHALOALKYL(VINYL)SULFENYL URACILS

Gustave K. Kohn, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Jul. 21, 1980, Ser. No. 170,480
Int. Cl.³ C07D *239/55, 239/54*
U.S. Cl. 544—311 **9 Claims**

1. A compound of the following formula A:



(A)

wherein,

R is hydrogen, methyl or ethyl;

R^1 is polyhalomethyl, polyhaloethyl or polyhalovinyl, wherein the halo group is bromo, chloro or fluoro;

R^2 is lower alkyl, lower alkoxy, bromo, chloro, fluoro, lower haloalkyl, cyano, nitro, lower alkylthio, hydroxy, lower alkylcarbonyl, lower alkoxycarbonyl, lower haloalkoxy, cycloalkyl, or cycloalkalkyl;

R^3 is hydrogen or independently selected from the values of R^2;

R^4 is hydrogen or independently selected from the values of R^2;

X is hydrogen, carbamoyl, or cyano; and

y is zero, one, two or three.

4,358,592

GLAUCINE PHOSPHATE CHUNKY PRISMATIC CRYSTALS

Christian T. Goralski, Midland, Mich., assignor to The Dow Chemical Company & Merrell Dow Pharmaceuticals Incorporated, Midland, Mich.

Continuation-in-part of Ser. No. 115,976, Jan. 28, 1980, abandoned. This application Feb. 2, 1981, Ser. No. 230,244
Int. Cl.³ C07D *221/18*
U.S. Cl. 546—075 **11 Claims**

1. Crystalline d,l-glaucine phosphate of chunky prismatic habit, having the morphology of at least three generally parallelepipedal prisms of different sizes fused together with the interfacial junctions being generally in parallel planes.

4. A process comprising:

(a) forming a slurry of d,l-glaucine phosphate in a lower alkanol;

(b) digesting the slurry at a digestion temperature of from about 50° C. to the boiling temperature;

(c) thereafter reducing the temperature of the slurry below the digestion temperature range; and

(d) separating crystalline d,l-glaucine phosphate having the crystal morphology illustrated in FIGS. **3** and **4** from the slurry.

11. D,L-Glaucine phosphate having the crystal morphology illustrated in FIGS. **3** and **4** and prepared by a process consisting essentially of digesting a slurry of d,l-glaucine phosphate in a lower alkanol at a temperature from about 50° C. to the boiling temperature, thereafter reducing the temperature below the digestion temperature range, and separating the resulting D,L-glaucine phosphate product having said crystal morphology.

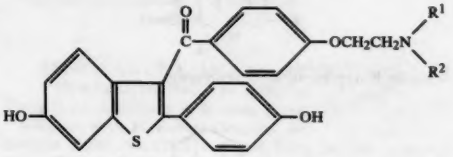
4,358,593

PROCESS FOR PREPARING 3-(4-AMINOETHOXYBENZOYL)BENZO[B]THIOPHENES

Charles D. Jones, Indianapolis, Ind., and Mary E. Goettel, Chesterland, Ohio, assignors to Eli Lilly and Company, Indianapolis, Ind.

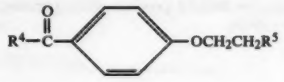
Filed Apr. 3, 1981, Ser. No. 246,334
Int. Cl.³ C07D *333/58, 409/12*
U.S. Cl. 546—202 **19 Claims**

1. A process for preparing a compound of the formula



wherein R^1 and R^2 are independently C_1–C_4 alkyl, or combine to form C_4–C_6 polymethylene or $—(CH_2)_2O(CH_2)_2—$; which process comprises acylating a compound of the formula

wherein R is $—COR^3$ or $—SO_2CH_3$, and R^3 is methyl, phenyl, p-tolyl, p-anisyl, or mono- or di(halo or nitro)phenyl; under Friedel-Crafts conditions with an acylating agent of the formula



wherein R^5 is X or

X is chloro, bromo or $—SO_2R^3$; and R^4 is chloro, bromo, iodo, or an activating ester group; when R^5 is X, displacing the X group with an amine of the formula

and cleaving the R groups.

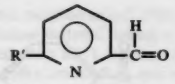
4,358,594

PROCESS FOR PREPARING CERTAIN 6-PHENOXY-2-PYRIDINECARBOXALDEHYDES

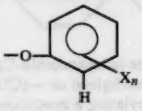
Sadarshan K. Malhotra, Walnut Creek, Calif., assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 266,016, Sep. 18, 1980, Pat. No. 4,324,896.
This application Oct. 30, 1981, Ser. No. 316,610
Int. Cl.³ C07D *213/48*
U.S. Cl. 546—298 **7 Claims**

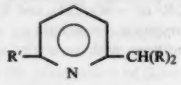
1. A process for the preparation of compounds corresponding to the formula



wherein R′ represents R; R represents



and wherein X independently represents alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkyl sulfonyl of 1 to 4 carbon atoms, trifluoromethyl, chloro, fluoro or bromo; n represents an integer of 0 to 2 or X_n represents 3,4-methylenedioxy with the proviso that R and R′ can be the same or different, which comprises, heating to a temperature of from about 60° to about 150° C. a compound of the formula



and an excess of an inorganic or organic acid in the presence of a solven: for a period of time sufficient to convert the starting compound to the desired product and separating the desired product therefrom.

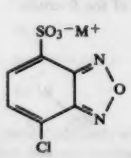
4,358,595

4-CHLORO-7-SULPHOBENZOFURAZAN AND SALTS THEREOF; NEW FLUORIGENIC THIOL SPECIFIC REAGENTS

Peter Ghosh, Sydney; Bela Ternai, Victoria, and M. W. Whitehouse, Adelaide, all of Australia, assignors to Pierce Chemical Company, Rockford, Ill.

Filed Oct. 13, 1981, Ser. No. 311,078
Int. Cl.³ C07D *271/08*
U.S. Cl. 548—126 **5 Claims**

2. The compound having the structure



wherein M^+ is H^+, Na^+, NH_4^+ or K^+.

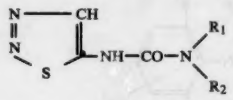
4,358,596

PROCESS FOR THE PREPARATION OF 1,2,3-THIADIAZOL-5-YL UREAS

Hans-Rudolf Krüger, Berlin, Fed. Rep. of Germany, assignor to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 89,106, Oct. 29, 1979, abandoned. This application Jan. 21, 1981, Ser. No. 226,899
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2848330
Int. Cl.³ C07D *285/06, 413/12, 417/12*
U.S. Cl. 548—127 **13 Claims**

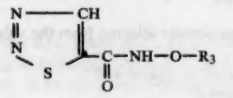
1. A process for the preparation of 1,2,3-thiadiazol-5-yl ureas of the formula



I

where R_1 is hydrogen or C_1–C_4-alkyl; R_2 is C_1–C_4-alkyl, C_5–C_8-cycloalkyl, C_5–C_8-cycloalkyl substituted by one or more alkyl groups, pyridyl, pyrimidyl, phenyl, or phenyl substituted by one or more residues selected from the group consisting of alkyl, halogen, alkylthio, alkoxy, trifluoromethyl and nitro, or in which R_1 and R_2 with the N-atom form a morpholino-, piperidino- or pyrrolidino-group, comprising

reacting a compound of the formula

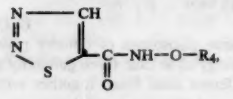


II

with an acid halide of the formula

R_4—X III

dissolved in an inert organic solvent in the presence of acid binding agents to form acylated 1,2,3-thiadiazol-5-carbohydroxam acid derivatives of the formula



IV

reacting this compound with an amine of the general formula

V

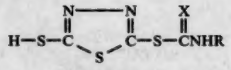
and isolating the product, in which R_1 and R_2 are as defined above, R_3 is hydrogen or a univalent metal atom, R_4 is C_1–C_4-alkylcarbonyl, C_1–C_4-alkylcarbonyl substituted by one or more halogen atoms, C_1–C_4-alkoxycarbonyl, benzoyl, benzoyl substituted by halogen, methyl or methoxy, phenyl sulfonyl, phenylsulfonyl substituted by halogen, methyl or nitro, alkylsulfonyl or alkylsulfonyl substituted by alkyl or benzyl, and X is a halogen atom.

4,358,597
THIOCARBAMATES OF 1,3,4-THIADIAZOLE-2,5-DITHIOL

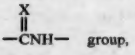
Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 20, 1976, Ser. No. 725,011
Int. Cl.³ C07D *285/12*; A01N *47/18, 47/20*
U.S. Cl. 548—142 **6 Claims**

1. A thiocarbamate compound of the general formula

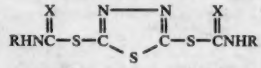


wherein X is selected from the group consisting of =O and =S and R is selected from the group consisting of hydrogen moieties, alkyl moieties containing 1 to 22 carbon atoms, and aralkyl moieties, alkylated aryl moieties, heterocyclic alkyl moieties, cycloalkyl moieties containing 6 to 40 carbon atoms joined to the

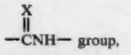


the said moieties being unsubstituted and substituted, said substitutions being individually selected from the group consisting of halogen moieties, nitro moieties, alkoxy moieties, alkyl moieties and carboalkoxy moieties.

2. A thiocarbamate compound of the general formula



wherein X is selected from the group consisting of =O and =S, and R is selected from the group consisting of hydrogen moieties, alkyl moieties containing 1 to 22 carbon atoms, and aralkyl moieties, alkylated aryl moieties, heterocyclic alkyl moieties, cycloalkyl moieties containing 6 to 40 carbon atoms joined to the



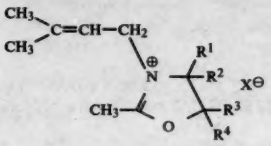
the said moieties being unsubstituted and substituted, said substitutions being individually selected from the group consisting of halogen moieties, nitro moieties, alkoxy moieties, alkyl moieties and carboalkoxy moieties.

4,358,598
2-(2,2-DIMETHYL-3-BUTEN-1-YL)-2-OXAZOLINES

Manfred Jautelat, Burscheid, and Dieter Arlt, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 15,376, Feb. 26, 1979, Pat. No. 4,283,554. This application Dec. 1, 1980, Ser. No. 212,051
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811190
Int. Cl.³ C07D *263/10*
U.S. Cl. 548—216 **1 Claim**

1. A 2-methyl-3-(3-methyl-2-butenyl)-2-oxazolinium salt of the formula



in which

R^1, R^2, R^3 and R^4 each independently is hydrogen, alkyl, aralkyl, optionally substituted aryl or two of them together form an alkylene chain with 4–6 carbon atoms, and

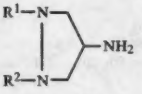
X is halogen, sulphonate or phosphate.

4,358,599
SYNTHESIS OF 4-AMINO-1,2-HYDROCARBYL PYRAZOLIDINES VIA 4-NITRO ANALOGS

Young S. Lo, and Harry R. Munson, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 176,175, Aug. 7, 1980, Pat. No. 4,309,552. This application Jun. 11, 1981, Ser. No. 272,806
Int. Cl.³ C07D *231/04*
U.S. Cl. 548—356 **5 Claims**

1. A process for the preparation of 4-amino-1,2-hydrocarbyl pyrazolidines having the formula:



wherein;

R^1 and R^2 are loweralkyl radicals containing from one to eight carbons, cyclic alkyl radicals containing from three to twelve carbons or phenylloweralkyl wherein the loweralkyl group contains from one to eight carbons and phenyl may be substituted with a nonreactive radical selected from the group consisting of lower alkyl, lower alkoxy, trifluoromethyl, halo, acetamido and sulfamoyl and may be the same or different, which comprises the steps of

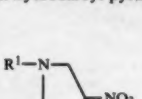
(1) reacting a disubstituted hydrazine acid salt having the formula:

$$R^1NH\text{-}NHR^2.2HX$$

wherein R^1 and R^2 are as defined above and X is an acid anion, with a 1,3-bis(disubstituted amino)-2-nitropropane having the formula:

$$R^3R^4NCH_2CHNO_2CH_2NR^5R^6$$

wherein R^3, R^4, R^5 and R^6 are loweralkyl radicals containing from one to eight carbon atoms and may be the same or different and R^3 and R^4 or R^5 and R^6 taken together with the adjacent nitrogen atom may form a heterocyclic residue selected from the group consisting of pyrrolidino, morpholino, piperidino and piperazino in the presence of a solvent therefor and at a temperature between room temperature and 150° C., to produce a 4-nitro-1,2-hydrocarbyl-pyrazolidine having the formula:



wherein R^1 and R^2 are as defined above, and

(2) reducing said 4-nitro-1,2-hydrocarbyl-pyrazolidine to produce said 4-amino-1,2-hydrocarbyl-pyrazolidine.

4,358,600

PROCESS FOR THE MANUFACTURE OF MALEIC ANHYDRIDE HAVING IMPROVED AGE MOLTEN COLOR

George E. Kuhlmann, and Juergen K. Holzhauer, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 29, 1981, Ser. No. 268,585
Int. Cl.³ C07D *307/60*
U.S. Cl. 549—262 **8 Claims**

1. A process for obtaining maleic anydride from butane having age molten Hazen color below 125 after 20 hours at 140° C., said process comprising polymerizing at a temperature of about 53° to 90° C. in the presence of at least 10 parts per million parts of maleic anhydride one of the following cobaltous chloride, manganese chloride, antimony chloride, bismuth chloride, chromium chloride, mercury chloride, nickel chloride, phosphorus chloride, rhodium chloride, silicon chloride, titanium chloride, and zirconium chloride color bodies present in crude maleic anhydride prior to fractionating the crude maleic anhydride and distilling off the purified maleic anhydride.

4,358,601

PROCESS FOR PREPARING 2-BUTENOLIDE

Jack Kwiatek, and Thomas S. Brima, both of Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Jul. 2, 1981, Ser. No. 280,172
Int. Cl.³ C07D *307/58, 307/60;* C07C *57/145*
U.S. Cl. 549—295 **14 Claims**

1. A process for preparing 2-butenolide which comprises reacting furan with oxygen in the vapor phase in the presence of a catalytically effective amount of a catalyst comprising a mixed metal oxide containing titanium, boron and molybdenum values; said mixed metal oxide being obtained by reacting titanium halide with ammonium heptamolybdate, reacting the resulting product with boric acid or alkyl borate and thereafter calcining the recovered solid in an inert or oxygen-containing atmosphere, or by reacting titanium halide with boric acid or alkyl borate to provide a titanium borate, reacting said titanium borate with ammonium heptamolybdate and thereafter calcining and recovered solid in an inert or oxygen-containing atmosphere.

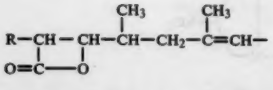
4,358,602

EBELACTONES AND PRODUCTION THEREOF

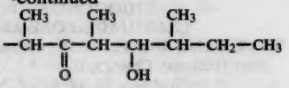
Hamao Umezawa, Tokyo; Takaaki Aoyagi, Fujisawa; Tomio Takeuchi, Tokyo; Masa Hamada, Tokyo; Shinichi Kondo, Yokohama, and Masaaki Ishizuka, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kao, Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,457
Claims priority, application Japan, Mar. 14, 1980, 55-31514
Int. Cl.³ C07D *305/12;* C12P *17/02*
U.S. Cl. 549—328 **9 Claims**

1. The new compound, ebelactone which is selected from ebelactone A and ebelactone B according to the general formula



-continued



wherein R is methyl group —CH_3 for ebelactone A and ethyl group —CH_2CH_3 for ebelactone B.

4,358,603

ACETAL STABILIZED PROSTAGLANDIN COMPOSITIONS

Cheng-Der Yu, Mountain View, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 16, 1981, Ser. No. 254,824
Int. Cl.³ C07C *177/00;* A61K *31/557*
U.S. Cl. 560—2 **27 Claims**

1. A stable prostaglandin composition comprising a prostaglandin dissolved in an anhydrous or aqueous pharmaceutically acceptable, water-miscible alcohol solution containing a stabilizing amount of a pharmaceutically acceptable acetal having the general formula $R_1CH(OR_2)_2$ wherein R_1 is an alkyl radical of 1 to 4 carbon atoms or phenyl and R_2 is an alkyl radical of 1 to 4 carbon atoms.

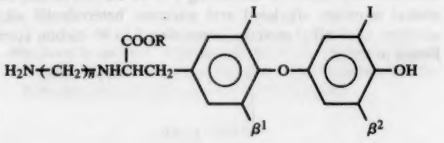
4,358,604

N-AMINOALKYL IODOTHYRONINE DERIVATIVES

James P. Albarella; Robert J. Carrico, and Thomas M. Li, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 4, 1981, Ser. No. 318,026
Int. Cl.³ C07C *101/30;* A61K *39/00*
U.S. Cl. 560—40 **6 Claims**

1. An iodothyronine derivative of the formula:



wherein n is an integer from 2 through 12, R is hydrogen or alkyl containing 1–6 carbon atoms, and β^1 and β^2 are, independently, hydrogen or iodine.

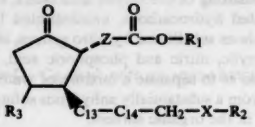
4,358,605

15-DEOXY-16-HYDROXY-16-VINYL AND CYCLOPROPYL SUBSTITUTED PROSTANOIC ACIDS AND CONGENERS

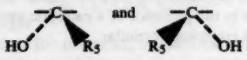
Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Nyack, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 888,183, Mar. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 857,715, Dec. 5, 1977, Pat. No. 4,198,521, which is a continuation-in-part of Ser. No. 706,343, Jul. 19, 1976, Pat. No. 4,061,670. This application May 8, 1980, Ser. No. 147,910
The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121 **20 Claims**

1. An optically active compound of the formula:



or a racemic mixture of that formula and the mirror image thereof wherein R_1 is selected from the group consisting of hydrogen and alkyl having from 1 to 12 carbon atoms; R_2 is selected from the group consisting of alkyl having from 2 to 7 carbon atoms optionally substituted with one or two alkyl groups each having up to 3 carbon atoms; R_3 is selected from the group consisting of hydrogen, hydroxy, alkanoyloxy having from 2 to 6 carbon atoms, alkoxy having from 1 to 3 carbon atoms, trialkyl (C_1–C_3) silyloxy and tetrahydropyran-2-yloxy; X is a divalent moiety selected from the group consisting of those of the formulae:



wherein R_5 is selected from the group consisting of vinyl and cyclopropyl; Z is a divalent moiety selected from the group consisting of those of the formulae:

$$-(CH_2)_6-, \text{ and } -CH_2-\overset{cis}{CH=CH}-(CH_2)_n-,$$

wherein n is an integer from 3 to 5, inclusive; the moiety —C_1-$_3$—C_{14}— is trans-vinylene or ethylene; and the pharmacologically acceptable cationic salts thereon when R_1 is hydrogen.

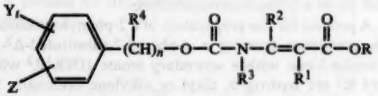
4,358,606

ESTERS OF PHENALKYLOXYCARBONYLAMINO ACIDS

Shy-Fuh Lee, Sunnyvale, and Clive A. Henrick, Palo Alto, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Jun. 19, 1981, Ser. No. 275,099
Int. Cl.³ C07C *125/065*
U.S. Cl. 560—163 **10 Claims**

1. A compound of the following formula:



wherein,

n is one, two, three, four or five;

R is lower alkyl, lower alkenyl or lower haloalkyl;

R^1 is hydrogen, lower alkyl, halogen,

phenyl, or phenyl substituted at one, two or three of the ring carbon atoms with a group selected from lower alkyl, lower haloalkyl, lower haloalkoxy, lower haloalkylthio, halogen, cyano and nitro;

R^2 is hydrogen, lower alkyl, lower haloalkyl, phenyl or phenyl substituted at one, two or three of the ring carbon atoms with a group selected from lower alkyl, lower haloalkyl, lower haloalkoxy, lower haloalkylthio, halogen, cyano and nitro;

R^3 is hydrogen or lower alkyl;

R^4 is hydrogen, lower alkyl, lower haloalkyl or halogen;

t is zero, one, two, three or four;

W is lower alkyl, phenyl, OR, SR, NHR or N(R)$_2$;

Y is halogen, lower alkyl, lower haloalkyl, lower haloalkoxy or lower haloalkylthio; and

Z is hydrogen or independently selected from the values of Y.

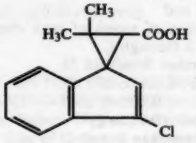
4,358,607

CHLORO-SUBSTITUTED BENZOSPIRO CYCLOPROPANE CARBOXYLIC ACID

Dale G. Brown, Hopewell, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Filed Jul. 21, 1978, Ser. No. 926,761
Int. Cl.³ C07C *65/11*
U.S. Cl. 562—405 **1 Claim**

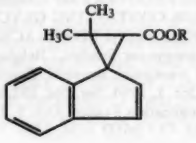
1. A method for preparing a chloro-substituted cyclopropane carboxylic acid of the formula



I

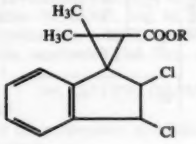
which comprises

reacting a spirocyclopropanecarboxylic acid ester of the formula



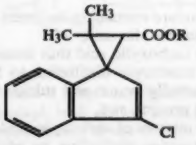
II

wherein R is C_1–C_3 alkyl with a iodobenzene dichloride in the presence of an inert solvent at a temperature in the range of from about 20° C. to about 30° C. for a period of time sufficient to essentially complete the reaction and obtain the dichloro derivative



III

dehydrohalogenating the dichloro derivative III with an alkali metal alkoxide in the presence of a solvent to obtain the ester



IV

hydrolyzing the ester IV with a base to yield the acid I.

4,358,608
PROCESS FOR PRODUCING UNSATURATED ALIPHATIC ACIDS

Wilfrid G. Shaw, Lyndhurst; David B. Terrill, Bedford, and David R. Woodbury, Bedford Hts., all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 755,707, Dec. 30, 1976, abandoned, which is a division of Ser. No. 693,256, Jun. 7, 1976, Pat. No. 4,042,533. This application Jun. 22, 1981, Ser. No. 276,297

Int. Cl.³ C07C *51/25, 57/055*

U.S. Cl. 562—534 **2 Claims**

1. The process for the production of acrylic acid or methacrylic acid by the vapor phase oxidation of acrolein and methacrolein, respectively, with molecular oxygen optionally in the presence of steam at a temperature of about 200° to about 500° C. employing a catalyst having the empirical formula

$$Mo_aV_bW_cX_dY_eO_f$$

wherein X is rhenium; and

Y is one or more of the elements selected from the group consisting of manganese, iron, copper, tin, zinc, aluminum, cobalt, nickel, phosphorus, cadmium, bismuth, silver, niobium, arsenic, chromium, the alkali and the alkaline earth elements, and

wherein the number of atoms of each element present is represented by a through f,

wherein a is a number from 6 to 18;

b is a number from 0.1 to 10;

c is a number from 0.1 to 6;

d is a number from 0.01 to 5;

e is a number from 0 to 5; and

f is a number that satisfies the valence requirements of the other elements present.

4,358,609
PROCESS FOR THE RECOVERY OF CARBOXYLIC ACID FROM MIXTURES CONTAINING GLYCOL ESTERS DERIVED FROM THESE ACIDS

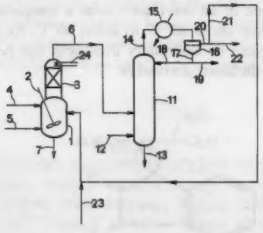
Nicolas Hardy, Jemeppe-sur-Sambre, Belgium, assignor to Propylox (Société Anonyme), Brussels, Belgium

Filed Oct. 1, 1980, Ser. No. 192,830

Claims priority, application France, Oct. 1, 1979, 79 24581

Int. Cl.³ B01D *3/36, 3/40*

U.S. Cl. 562—606 **14 Claims**



1. Process for the recovery of carboxylic acids from a mixture containing glycol esters derived from these acids, by hydrolysis of these esters, said mixture being obtained during the epoxidation of an olefin with the aid of percarboxylic acid comprising:

(a) reacting the mixture containing the esters at the boil with water to form carboxylic acid,

(b) entraining the carboxylic acid thus formed by means of the water, by azeotropic distillation to form a mixture containing essentially water and substantially all of the carboxylic acid present, and

(c) subjecting the mixture of carboxylic acid and water thus obtained to extractive distillation by adding an organic solvent which is insoluble in water and in which water is insoluble, said organic solvent being selected from the group consisting of carboxylic acid esters, ethers, nitriles, halogenated hydrocarbons, unsubstituted hydrocarbons, hydrocarbons substituted by nitro groups, non-acid esters of carboxylic, nitric and phosphoric acid, and mixtures thereof, so as to separate a mixture of water and organic solvent from a substantially anhydrous solution of carboxylic acid in the organic solvent.

4,358,610
PROCESS FOR THE PRODUCTION OF METHACRYLIC ACID FROM ISOBUTYRALDEHYDE

S. Erik Pedersen, Mentor; Louis F. Wagner, Solon, and Christos Paparizos, Willowick, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Mar. 2, 1981, Ser. No. 239,756

Int. Cl.³ C07C *51/235*

U.S. Cl. 562—535 **10 Claims**

1. A process for the production of methacrylic acid from the oxidation of isobutyraldehyde, the process comprising contacting gaseous isobutyraldehyde with molecular oxygen at oxidative conditions in the presence of a catalytic amount of a composition of the empirical formula:

$$Mo_{12}P_{0.1\text{-}3}Cu_{0.01\text{-}2}V_{0.01\text{-}3}M_{0.1\text{-}3}M'_{0.01\text{-}2}O_x \quad (I)$$

where

M is at least one of K, Rb, Cs and Tl;

M′ is at least one of Mg, Ca, Sr, Ba, Nb and Sb; and

x is a positive number that satifies the valence requirements of the other elements present.

4,358,611
PREPARATION OF 2-PHENYLSEMICARBAZIDES

Kurt H. G. Pilgram, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 9, 1978, Ser. No. 867,750

Int. Cl.³ A01N *9/20;* C07C *133/02*

U.S. Cl. 564—34 **15 Claims**

1. A process for the preparation of a 2-phenylsemicarbazide which comprises the steps of

(a) treating a phenylhydrazine, or salt thereof, with a chloroformate;

(b) adding phosgene;

(c) treating the resulting product with a secondary amine; and

(d) hydrolyzing the resulting acylated semicarbazide product from (c) to a 2-phenylsemicarbazide.

10. A process for the preparation of a 2-phenylsemicarbazide which comprises treating a 4-phenyl-2-substituted-Δ^2-1,3,4-oxadiazolin-5-one with a secondary amine HNR^1R^2 wherein R^1 and R^2 are hydrogen, alkyl or alkylene optionally interrupted by one or more oxygen atoms and hydrolyzing the resulting reaction product in the presence of an alkaline material to produce the desired 2-phenylsemicarbazide.

4,358,612
PROCESS FOR PRODUCTION OF α-HALOALKYLAMIDES

Richard D. Gless, Jr., Oakland, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 222,210, Jan. 2, 1981, abandoned. This application Aug. 21, 1981, Ser. No. 294,101

Int. Cl.³ C07C *102/06*

U.S. Cl. 564—137 **13 Claims**

1. A process for the production of an optical isomer of an amide having the formula

$$RCONR_2R_3$$

in which R is α-halo-C_1–C_8-alkyl; and R_2 and R_3 are the same

or different C_1–C_8 alkyl, comprising reacting an ester having the formula

$$RCOOR_1$$

in which R_1 is C_1–C_8 alkyl, with an amine having the formula

$$R_2R_3NH$$

in the presence of from about 50 to about 300 mole %, based on the ester, of a promoter comprising a halide of a Group IIIa metal having an atomic weight of 26 or greater, or of a Group IVb metal.

4,358,613

PROCESS FOR THE PREPARATION OF SUBSTITUTED GUANIDINES

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 107,057, Dec. 26, 1979, abandoned. This application Mar. 16, 1981, Ser. No. 243,732

Int. Cl.³ C07C *129/12*

U.S. Cl. 564—238 **6 Claims**

1. In a process for preparing a guanidine which comprises reacting a substituted (aminomethylene) ammonium halide and a primary amine, the improvement consisting of carrying out the reaction in the presence of at least equimolar amounts of a coreactant strong base selected from the group consisting of

A. tertiary amines;

B. alkali or alkaline earth metal hydroxides;

C. the guanidine itself that is the product of the reaction;

D. the primary amine reactant itself wherein the primary amine, $R'NH_2$, is used in at least one molar excess above the stoichiometric amount;

E. quaternary ammonium hydroxides.

4,358,614

PREPARATION OF α- AND β-CYCLOCITRAL, AND THE N-METHYLALDIMINES OF THESE COMPOUNDS

Lothar Janitschke, Ludwigshafen, and Werner Hoffmann, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

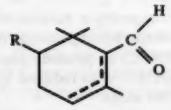
Filed Jul. 2, 1981, Ser. No. 279,802

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1980, 3027689

Int. Cl.³ C07C *119/00, 45/00*

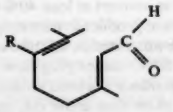
U.S. Cl. 564—248 **6 Claims**

1. A process for the preparation of a cyclocitral of the general formula I



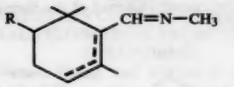
(I)

where R is hydrogen or methyl and where the bonds shown in broken lines indicate the presence of a double bond in the 1- or 2-position of the cyclohexene ring, in which an open-chain aldehyde of the general formula III



(III)

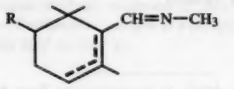
is reacted with methylamine at a suitable temperature to give its N-methylaldimine, the latter is cyclized at a suitable temperature with a multi-molar excess of concentrated sulfuric acid within the range of 1:2 to 1:10, to give the cyclocitral N-methylaldimine of the general formula II



(II)

and the last-mentioned compound, with or without intermediate isolation from its reaction mixture, is hydrolyzed to the cyclocitral I in a conventional manner.

2. Cyclocitral N-methylaldimines of the general formula II



(II)

where R is hydrogen or methyl and where the bonds shown in broken lines indicate the presence of a double bond in the 1- or 2-position of the cyclohexene ring.

4,358,615

PROCESS FOR THE PRODUCTION OF 1-AMINO-PROPANEDIOL-(2,3) (II)

Axel Kleemann; Robert Nygren, and Rudolf Wagner, all of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,459

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014109

Int. Cl.³ C07C *89/02, 91/10*

U.S. Cl. 564—475 **33 Claims**

1. In a process for the production of 1-amino-propanediol-2,3 by the reaction of glycidol with ammonia the improvement comprising reacting glycidol and liquid ammonia under pressure sufficient to keep the ammonia in liquid form and in the presence of water, the amount of water not being over 10 parts by weight per part by weight of glycidol.

4,358,616

PROCESS FOR THE PREPARATION OF ALKYLTHIOMETHYLPHENOLS AND ARYLTHIOMETHYLPHENOLS

Karlfried Wedemeyer, Cologne, and Helmut Fiege, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

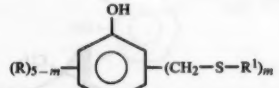
Continuation of Ser. No. 65,687, Aug. 10, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,987

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 2838273

Int. Cl.³ C07C *148/00*

U.S. Cl. 568—45 **29 Claims**

1. Process for the preparation of a thio-methylphenol compound of the formula



(I)

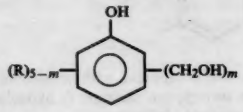
wherein

m is 1, 2 or 3; each R is individually selected from hydrogen, alkyl, cycloalkyl, aryl, aralkyl, alkoxy, cycloalkoxy, aryloxy, halogen or nitro; or the

R's taken together represent a benzene ring or a cycloalkane ring fused to the phenyl ring of formula (I); and

R^1 is alkyl of 1–12 carbon atoms, alkoxy-substituted alkyl of 1–12 carbon atoms, cycloalkyl; phenyl; halogen-substituted phenyl; or aralkyl,

which process comprises, in the absence of a catalyst, reacting an hydroxymethylphenol of the formula



(II)

wherein

R and m are defined as above with a mercaptan or thiophenol of the formula

R^1—S—H

where

R^1 is defined as above, at a temperature from 50° C. to 200° C.

4,358,617

SUBSTITUTED TRICYCLODECANE DERIVATIVES, PROCESSES FOR PRODUCING SAME AND ORGANOLEPTIC USES THEREOF

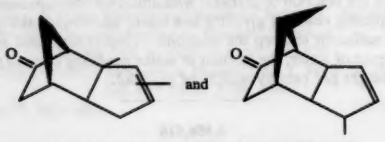
Mark A. Sprecker, Sea Bright, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 220,628, Dec. 29, 1980, abandoned, which is a division of Ser. No. 144,898, Apr. 29, 1980, Pat. No. 4,275,251. This application Sep. 25, 1981, Ser. No. 305,534

Int. Cl.³ C07C *49/643*

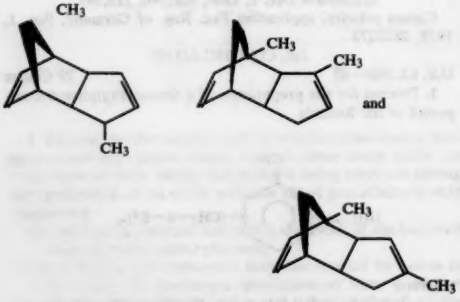
U.S. Cl. 568—373 **4 Claims**

1. A mixture of compounds defined according to the structure:



produced according to the process comprising the steps, in sequential order of:

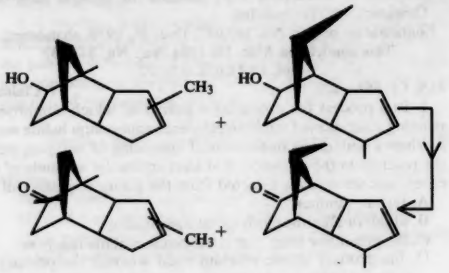
(i) intimately admixing in the presence of a Lewis acid catalyst or a protonic acid catalyst a mixture of methyl substituted bicyclopentadienes having the structures:



with an alkanoic acid anhydride or an alkanoic acid at a temperature of from about 0° C. up to about 50° C. and a concentration of acid catalyst of from 0.01 mole percent up to 1 mole percent based on the weight of reaction mass whereby a product containing a major proportion of esters is formed;

(ii) hydrolyzing the resulting product containing a major proportion of esters with a hydrolysis reagent whereby a mixture containing a major proportion of alcohols is formed, said hydrolysis being carried out using as a hydrolysis reagent from 10 up to 50% by weight alkali metal hydroxide; the mole ratio of alkali metal hydroxide:mixture of ester derivatives being from 1 up to 2 moles of alkali metal hydroxide per mole of ester at a temperature of from about 40° C. up to about 120° C.; and then

(iii) oxidizing the resulting mixture of alcohols with an oxidation reagent selected from the group consisting of sodium dichromate, Jones reagent, chromium trioxide, copper chromite, and pyridinium chloro chromate at a temperature in the range of from 20° C. up to 220° C. according to the reaction:



4,358,618

DECOMPOSITION OF CUMENE OXIDATION PRODUCT

Stylianos Sifniades, Madison; Allen A. Tunick, Boonton, and Fred W. Koff, Long Valley, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 22, 1981, Ser. No. 276,233

Int. Cl.³ C07C *45/53, 37/08*

U.S. Cl. 568—385 **8 Claims**

1. A process of decomposing a cumene oxidation product mixture containing cumene hydroperoxide (CHP) and dimethylphenylcarbinol (DMPC) to produce phenol, acetone and alpha-methyl styrene (AMS) with reduced by-product formation which comprises the steps:

(a) mixing the cumene oxidation product with an acid catalyst in a back-mix reactor in the presence of about 0.4 to about 4.5% water, by weight of reaction mixture, at a temperature between about 50° C. and about 90° C. for a time sufficient to lower the CHP concentration of the back-mix reaction mixture to between about 0.5 and about 5.0 weight % and to convert at least 40% of the DMPC in the cumene oxidation product to dicumylperoxide (DCP);

(b) reacting the back-mix reaction mixture at between about 50° C. and about 90° C. under plug flow conditions for a time sufficient to produce a second mixture having a CHP concentration no more than about 0.4; and

(c) reacting the second reaction mixture at a temperature between about 120° and about 150° C. under plug flow conditions for a time sufficient to convert at least 90% of the DCP to AMS, phenol and acetone.

4,358,619

PROCESS FOR THE PRODUCTION OF LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

Ingo Stemmler, Odenthal; Hanns P. Müller, and Kuno Wagner, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 13,849

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808228

Int. Cl.³ C07C *27/00*

U.S. Cl. 568—388 7 Claims

1. A process for the production of low molecular weight polyhydroxyl compounds comprising autocondensing formaldehyde hydrate in the presence of soluble or substantially insoluble compounds of divalent lead as catalyst, said divalent lead being capable of forming saturated aqueous solutions or suspensions in desalted, CO_2-free water having a pH value of more than 4.5 said process further characterized in that the condensation reaction is carried out in the presence of

(a) a quantity of catalyst which corresponds to from 0.1 to 1 gram equivalent of lead per kg of formaldehyde,

(b) more than 15% by weight (based on formaldehyde) of compounds capable of enediol formation as co-catalyst,

in the absence of further organic or inorganic bases.

4,358,620

9-FORMYL-9,10-DIHYDRO-9,10-METHANOANTHRACENE

Makoto Sunagawa; Hiromi Sato; Junki Katsube, all of Toyonaka, and Hisao Yamamoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 639,974, Dec. 11, 1975, Pat. No. 4,224,344. This application Apr. 14, 1980, Ser. No. 139,740

Claims priority, application Japan, Dec. 13, 1974, 49-143734; Dec. 27, 1974, 49-2909; Apr. 4, 1975, 50-41452; Jul. 7, 1975, 50-83871

Int. Cl.³ C07C *47/52*

U.S. Cl. 568—439 1 Claim

1. 9-Formyl-9,10-dihydro-9,10-methanoanthracene.

4,358,621

PROCESS FOR PRODUCING ALDEHYDES

Tadamori Sakakibara; Yoshihisa Matsushima, both of Ooi, and Katsumi Kaneko, Tokyo, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1981, Ser. No. 266,646

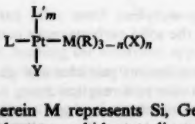
Claims priority, application Japan, May 28, 1980, 55-70064

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 11 Claims

1. A process for producing aldehydes which comprises reacting an olefin with a mixture of hydrogen and carbon monoxide, in a molar ratio of about 1:20 to 20:1, at a temperature of about 15°–150° C., and a pressure of about 0.1–30 MPa, in the presence of a catalyst mixture comprising:

(a) a platinum (II) organometallic compound of the following general formula:



wherein M represents Si, Ge, Sn or Pb; L represents an unidentate or bidentate ligand containing P, As or Sb; L' represents a coordination compound; Y represents an alkyl group, an aryl group, an alkoxy group, an aryloxy group, or hydrogen; R independently represents an alkyl group, an aryl group, an alkoxy group or an aryloxy group; X independently represents halogen or hydrogen, n represents an integer of 0, 1 or 2; and m is 1 when L is an unidentate ligand or 0 when L is a bidentate ligand; and

(b) a dihalide of Ge, Sn or Pb.

4,358,622

PREPARATION OF METHACROLEIN AND METHACRYLONITRILE FROM TERT-BUTYL ALKANOATES

Joseph W. Nemec, Rydal, and Michael S. Cholod, Cornwells Heights, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 84,255, Oct. 12, 1979, abandoned. This application Mar. 19, 1981, Ser. No. 245,296

Int. Cl.³ C07C *45/32, 47/20*

U.S. Cl. 568—470 5 Claims

1. A process for preparing methacrolein which comprises the vapor phase catalytic oxidation of tert-butyl alkanoate in the presence of molecular oxygen at a temperature in the range of from about 200° to 600° C.

4,358,623

PROCESS FOR CATALYTICALLY CONVERTING METHANOL TO FORMALDEHYDE

Carl D. Murphy, and William P. McMillan, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 23, 1981, Ser. No. 286,235

Int. Cl.³ C07C *47/052, 47/055*

U.S. Cl. 568—473 6 Claims

1. In a process for converting methanol to formaldehyde, which process comprises (a) continuously passing a vaporous mixture comprising methanol and molecular oxygen through a converter containing a solid catalyst, (b) continuously converting at least a portion of the methanol in said vaporous mixture to formaldehyde in the presence of said catalyst, (c) continuously withdrawing from said converter a hot gaseous reaction product comprising formaldehyde at a temperature in the range of about 290° C. to 700° C., (d) continuously cooling said hot gaseous reaction product, and (e) processing the resulting cooled reaction product to recover a formaldehyde composition therefrom, the improvement which comprises:

effecting said cooling by passing said hot gaseous reaction product through an array of externally-cooled tubes filled with balls composed of an inert solid.

4,358,624

FLUORINATED MONOPHENOLS AND DIPHENOLS AND METHOD FOR THEIR PREPARATION

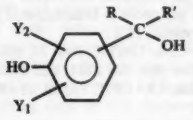
Victor Mark, Evansville, and Charles V. Hedges, Mount Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 31, 1980, Ser. No. 221,703

Int. Cl.³ C07C *39/14*

U.S. Cl. 568—722 20 Claims

1. A fluorinated monophenol having the general formula:



wherein Y_1 and Y_2 are each independently selected from the group consisting of hydrogen, chlorine, bromine and alkyl radical having from 1 to about 4 carbon atoms; R is selected from the group consisting of fluorinated alkyl radical and fluorinated aryl radical; and R' is selected from the group consisting of fluorinated alkyl radical, fluorinated aryl radical, alkyl radical, aryl radical and hydrogen.

4,358,625

METHOD FOR THE PRODUCTION OF HIGH-PURITY ETHYLENE GLYCOLS

Alberto Paggini, Spino D'Adda; Ugo Romano, Milan; Donato Furlone, Novate Milanese, and Domenico Sanfilippo, Milan, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 851,296, Nov. 14, 1977, abandoned. This application Mar. 9, 1979, Ser. No. 19,109
Claims priority, application Italy, Nov. 17, 1976, 29386 A/76
Int. Cl.[3] C07C *31/20*
U.S. Cl. 568—867 4 Claims

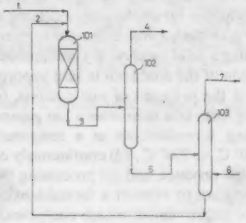
1. A method for the production of ethylene glycol of high purity having low values of U.V. absorbance comprising hydration of ethylene oxide to ethylene glycol wherein the hydration of ethylene oxide is effected using water produced during the manufacture of ethylene oxide by the catalytic oxidation of ethylene, additional water sufficient to effect hydration of the ethylene oxide, and an alkali metal borohydride.

4,358,626

PROCESS FOR THE PRODUCTION OF SECONDARY ALCOHOLS

Yoshiharu Okumura, Kawagoe; Tadamori Sakakibara, and Katsumi Kaneko, both of Ooi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,491
Claims priority, application Japan, Dec. 25, 1980, 55-182897
Int. Cl.[3] C07C *29/04*
U.S. Cl. 568—899 9 Claims



1. In a process for the production of secondary alcohols by hydrating a n-olefin selected from the group consisting of propylene and n-butene or a hydrocarbon mixture containing said n-olefin with water in the presence of an acidic cation exchange resin catalyst, the improvement which comprises using a feed which is substantially free from an isoolefin and carrying out the reaction in the presence of a C_2 to C_5 oxy acid or the lactones, lactides, methyl or ethyl esters thereof, or mixtures thereof in a proportion of 0.5 to 100 parts by weight to 1 part by weight of water.

4,358,627

REDUCING CHLORIDE CONCENTRATION

Joseph G. Ameen, Apalachin; Charles A. Joseph, Endwell; Dennis L. Rivenburgh, Endicott, and David W. Sissenstein, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 116,190, Jan. 28, 1980, abandoned. This application Apr. 13, 1981, Ser. No. 253,491
Int. Cl.[3] C07C *19/00, 21/00*
U.S. Cl. 570—238 19 Claims

1. A process for reducing the concentration of chloride in a system consisting essentially of ethylenically unsaturated chlorinated hydrocarbon which is liquid at the conditions of the process, water and HCl which comprises providing in the system with said ethylenically unsaturated chlorinated hydrocarbon a nitrogen containing compound having at least one unshared pair of electrons capable of forming a dative covalent bond and contacting said system, subsequent to providing in the system said nitrogen compound, with a molecular sieve having an effective pore size of about 3 to about 10 A to thereby reduce the concentration of chloride in said system after contact with said molecular sieve to less than 5 ppm and wherein said concentration of water after contact with said molecular sieve is less than 50 ppm and wherein said nitrogen containing compound forms a complex with HCl, said complex is broken down into HCl and said nitrogen containing compound upon contact with said molecular sieve thereby regenerating said nitrogen containing compound, wherein some nitrogen containing compound is adsorbed on the molecular sieve and is then replaced on said molecular sieve by water whereby said nitrogen containing compound is released back into said system.

4,358,628

ALKYLATION OF BENZENE COMPOUNDS WITH DETERGENT RANGE OLEFINS

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 26, 1981, Ser. No. 277,514
Int. Cl.[3] C07C *2/64*
U.S. Cl. 585—455 8 Claims

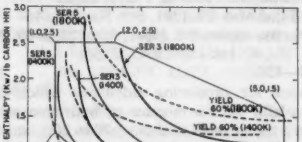
1. A process for alkylating benzene and lower alkyl-substituted benzenes with a detergent range olefin having a carbon number ranging from about 8 to about 22 which comprises contacting said benzene or lower alkyl-substituted benzene with said olefin in the presence of a catalyst comprising tungsten oxide supported on a porous silica-alumina support which support contains from about 70 to about 90% by weight of silica wherein said catalyst is prepared by impregnating the support with an aqueous solution of a tungsten salt, calcining the impregnated support in an oxidizing atmosphere at a temperature ranging from up to about 600° C. up to about 800° C. and subsequently activating the catalyst in a neutral or reducing gaseous atmosphere at a temperature ranging from up to about 200° C. up to about 350° C.

4,358,629

METHOD OF PRODUCING ACETYLENE FROM COAL

Chi S. Kim, Cambridge, Mass., assignor to Avco Corporation, Wilmington, Mass.

Filed Aug. 18, 1980, Ser. No. 179,144
Int. Cl.[3] C10B *49/02, 49/08, 51/00*
U.S. Cl. 585—538 13 Claims



8. A method of producing acetylene from solid carbonaceous matter by decomposing the solid carbonaceous matter in gas:

supplying solid carbonaceous matter particles and gas at a predetermined controlled rate to a reaction zone;

heating said solid carbonaceous matter and gas so that the decomposition reaction takes place under conditions embraced by the area defined by the x, y coordinates (1.0, 2.5) (2.0, 2.5) (5.0, 1.5) (5.0, 0.6) (2.0, 0.6) (1.0, 1.25) where x coordinate is the specific gas enthalpy in Kw/SCFM gas and the y coordinate is the specific solid enthalpy in Kw/lb. carbon Hr to produce acetylene; and

removing said acetylene from the reaction zone to prevent it from decomposing.

4,358,630

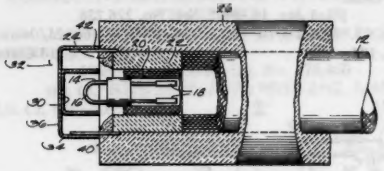
REPLACEMENT CAP FOR REPEATING USE THERMOCOUPLE

Richard A. Falk, 519 Westminster Dr., Waukesha, Wis. 53186

Filed Jan. 2, 1981, Ser. No. 221,963

Int. Cl.³ G01K *1/12, 7/00*

U.S. Cl. 136—234 **1 Claim**



1. In a high temperature thermocouple assembly for repeated measurement of the temperature of a molten metal bath including a temperature measuring device having a projecting sensing element, means for supporting the element, and a penetrable protective sleeve surrounding the means for supporting the element, the improvement comprising a fusible metal cap for protecting the tip during handling and immersion through molten metal slag, said cap being provided with projecting means for penetrating said protective sleeve and frictionally retaining the cap on the sleeve and assembly and wherein said projecting means comprise pins arranged in a diametral plane through the cap and welded to the inside of the cap and projecting exteriorly of the cap.

4,358,631

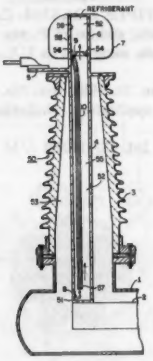
HEAT DISSIPATING ELECTRICAL BUSHING

Setsuyuki Matsuda, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 185,716, Sep. 10, 1980, abandoned. This application Mar. 9, 1982, Ser. No. 356,586

Int. Cl.³ H01B *17/26, 17/54*

U.S. Cl. 174—15 BH **6 Claims**



1. A bushing for electrical apparatus of the type including an outer housing, an electrode disposed within said outer housing, and an insulating gas disposed within said housing and electrically insulating said electrode from said housing, said bushing comprising:

a hollow insulating shell secured to said outer housing;

an insulating gas disposed within said shell and in open communication with the insulating gas in said outer housing;

a hollow, one-piece electrical conductor disposed within, and spaced-apart from, said shell, said conductor having a contact end extending outwardly from said shell and into said outer housing to physically contact said electrode, said conductor having a terminal end distal from said contact end extending outwardly from said shell and having an electrical terminal extending outwardly therefrom;

a heat dissipation device connected to said conductor terminal end externally of said shell, and in open communication with the interior of said conductor,

a compressive refrigerant disposed in the interior of said hollow conductor, said refrigerant effecting cooling of said electrode through the transfer of heat based on a phase change due to the vaporizing of said refrigerant on said contact end and the liquefying of said refrigerant on said heat dissipation device,

a liquid collecting plate projecting from the inner wall surface of the lower end of said heat dissipation device; and

means for introducing said liquefied refrigerant from said liquid collecting plate to said contact end without contacting the intermediate surface of said conductor.

4,358,632

APPARATUS FOR SHIELDING HIGH FREQUENCY ELECTRICAL AND ELECTROMAGNETIC WAVES FOR TIGHT WALL LEAD-INS FOR GROUPS OF LINES

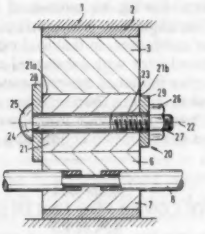
Jurgen Buch, Maschener Schutzenstrasse 45, Seevetal, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,237

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909890

Int. Cl.³ H02G *3/22*

U.S. Cl. 174—35 MS **4 Claims**



1. Apparatus for passing a plurality of conductors through a wall or the like in a water, gas, and fireproof manner while providing shielding against high frequency electrical and electromagnetic waves, said conductors having exposed shield jacket portions, said apparatus comprising:

a frame insertable in said wall for defining a passage therethrough;

a plurality of fitting pieces in the interior of said frame corresponding in number to the number of conductors;

a plurality of additional neutral pieces in said frame sufficient to fill same;

said fitting pieces and neutral pieces being formed of an at least partially elastic material swellable under heat action containing electrically conductive particles,

each of said fitting pieces being formed as a pair of halves having recesses on their mating surfaces for receiving one of the conductors, each of said recesses having a projection for mating with the exposed shield jacket portion of the conductor within the frame, and

an elastic material piece centrally positioned in said frame and having a hole receiving a bolt extending through said frame generally parallel to the axes of said recesses, said bolt mounting a pair of pressure plates applied to the faces of said centrally positioned piece and a nut for deforming said centrally positioned piece and exerting compressive

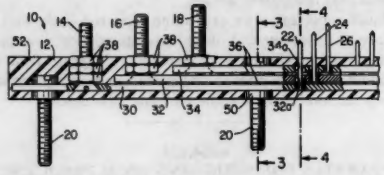
forces on said fitting pieces and neutral pieces in said frame to obtain the sealing and shielding action.

4,358,633

ELECTRICAL BUS BAR ASSEMBLY AND METHOD OF MANUFACTURE

James W. Reynolds, Jr., 35 Delaware Ave., Commack, N.Y. 11725

Filed Dec. 21, 1979, Ser. No. 105,905
Int. Cl.³ H02G 5/06; B29C 1/00
U.S. Cl. 174—72 B **11 Claims**



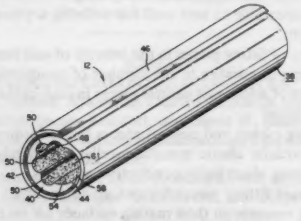
1. An electrical bus bar assembly comprising:
a plurality of elongated conductors in spaced, stacked alignment;
at least one conductive connector pin protruding from each conductor and extending outwardly from said bus bar assembly;
a plurality of terminal means each dedicated to at least one of said conductors for providing an electrical input connection to the respective conductor;
each conductor having an over-sized bore therethrough positioned in alignment with each pin protruding from every other conductor, so that said pin may pass through said each conductor with substantial clearance; and
a non-conductive hardened material encapsulating said conductors and extending therebetween as well as into said over-sized bores to provide insulation between said conductors and between said conductors and said pins.

4,358,634

PROTECTIVE COVER FOR USE IN SEALED CABLE SPLICES

Zoltan B. Dienes, Annandale, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Apr. 24, 1980, Ser. No. 143,414
Int. Cl.³ H02G 15/18
U.S. Cl. 174—88 R **31 Claims**



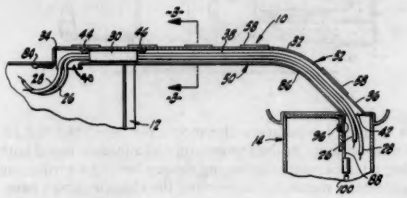
1. A protective cover for an electrical connection, comprising a generally cylindrical, elongate tubular member of resilient, non-conductive material having a wall the ends of which overlap over a circumferential portion of said member, the facing surfaces of said overlapping wall portion being relatively smooth, the inner circumferential surface of said member having a recess extending radially therein and axially along at least a portion of the longitudinal extent of said member, and a sealant on a relatively smooth wall surface portion of said member at the overlapping portion of said wall.

4,358,635

WIREWAY

James B. Druffel, Oakland, Calif., assignor to Prescolite, Oakland, Calif.

Filed Jan. 19, 1981, Ser. No. 226,238
Int. Cl.³ H02G 3/04; F21S 1/02; F21V 21/00, 25/04
U.S. Cl. 174—101 **10 Claims**



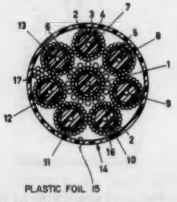
1. A wireway for supporting to a compartment at least one wire and a temperature sensitive device for interrupting electrical flow through the wire at a selected temperature within the compartment comprising:
a. a raceway having a first end portion and a second end portion with walls forming an enclosed channel therebetween, said raceway further including a first opening at said first end portion and a second opening at said second end portion;
b. means intended for confining the temperature sensitive device to a position within said channel of said raceway;
c. means intended for conducting heat from the interior of the compartment to said channel of said raceway and;
d. means intended for supporting said wireway to the compartment.

4,358,636

MULTIPLE COAXIAL CABLE

Barend Ijff, Eindhoven, and Jozef P. van de Hoef, Hilversum, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,959
Claims priority, application Netherlands, Jul. 6, 1979, 7905279
Int. Cl.³ H01B 7/18
U.S. Cl. 174—103 **5 Claims**



1. An electrical connecting cable comprising:
a central coaxial unit and a plurality of coaxial units wound around the central coaxial unit, each unit comprising a central conductor, a dielectric surrounding the conductor, and an outer conductor surrounding the dielectric; and
an outer cable cover of insulating material,
wherein the cable further comprises a helically wound layer of electrically conducting wires disposed around the outer conductor of the central coaxial unit, said helically wound layer providing electrical contact between the outer con-

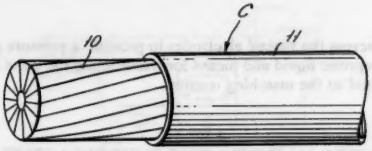
ductors of said central coaxial and said plurality of coaxial units.

4,358,637

ABOVE-GROUND CONDUCTOR UNIT WITH CORONA NOISE REDUCING COVERING COMPRISING A CONDUCTIVE MATERIAL AND A HYDROPHILIC MATERIAL

Attilio Lanfranconi, Gorgonzola, Italy, assignor to Societa Cavi Pirelli S.p.A., Milan, Italy

Filed Jun. 17, 1981, Ser. No. 274,460
Int. Cl.³ B32B *15/08, 15/20;* H01B *3/42, 3/44*
U.S. Cl. 174—127 **15 Claims**



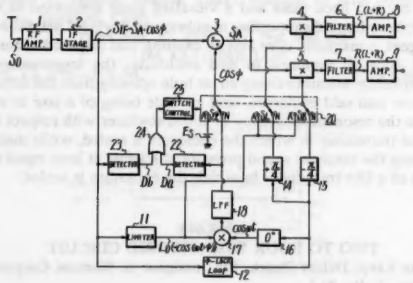
1. A conductor unit for overhead lines for transmitting high voltage, alternating, electric current, said unit comprising one or more electrical conductors surrounded by a thin, semi-conductive layer of a mixture of an insulating material, at least one conductive material and at least one hydrophilic material, said unit having the characteristic that during rainfall or significant atmospheric humidity corona noise is suppressed or drastically reduced as compared to the same unit without a hydrophilic material in the semi-conductive layer.

4,358,638

APPARATUS FOR RECEIVING AN AM STEREOPHONIC SIGNAL

Norio Numata, and Satoshi Yokoya, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,024
Claims priority, application Japan, Nov. 29, 1979, 54-165213[U]
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GS **17 Claims**



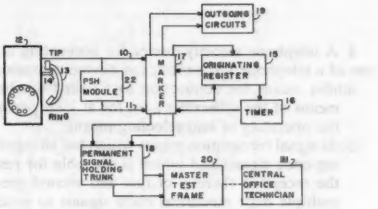
1. Apparatus for receiving an AM stereophonic signal of the type having monaural information represented by amplitude modulations of a signal carrier and stereophonic information represented by phase modulations of said signal carrier, said apparatus comprising reference signal generating means for generating a reference signal synchronized with said signal carrier of the received AM stereophonic signal; amplitude limiter means for limiting said AM stereophonic signal to remove amplitude modulations of said signal carrier and thereby produce an amplitude-limited signal carrier; demodulating means for demodulating the information represented by said AM stereophonic signal; means for supplying said AM stereophonic signal to said demodulating means; switch means having a first state for supplying said reference signal to said demodulating means, whereby said stereophonic information is demodulated, and a second state for supplying said amplitude-limited signal carrier to said demodulating means, whereby said monaural information is demodulated; detecting means for detecting when said stereophonic information will not be properly demodulated to produce a control signal; and switch control means responsive to said control signal for changing over said switch means from said first state to said second state.

4,358,639

PERMANENT SIGNAL HOLDING MODULE

Joseph P. Morin, 2424 Rockwell Ave., Baltimore, Md. 21228

Filed Aug. 18, 1980, Ser. No. 179,230
Int. Cl.³ H04M *3/14, 3/22*
U.S. Cl. 179—22 **10 Claims**



7. A semi-automatic arrangement for a telephone communications system to permanently hold a subscriber's line from internal apparatus of a central exchange facility for the duration of an off hook condition of a subscriber's telephone handset, said arrangement comprising:

a. central exchange apparatus comprising conductors and switching devices for routing and connecting a multiplicity of subscribers' lines from a line link frame to a master test frame, said conductors and switching devices further comprising tip, ring and supervisory or sleeve channels;

b. said master test frame comprising means for support of manual detection and determination of a handset off the hook condition on any selected subscriber's line;

c. said master test frame further comprising means for temporary manual application of electrical energy via said tip channel to said line link frame for the disconnection and lockout of a selected subscriber's line;

d. a PSH module responsive to said temporary manual application of electrical energy via said tip channel to said line link frame comprising switching means for disconnecting a selected subscriber's line from said internal apparatus of a central exchange, switching means for opening a hold magnet lead and placing ground potential on a line hold (LH) lead so as to make said selected subscriber's line appear busy to incoming calls from other subscribers addressed to said selected subscriber's line, and switching means for latching up said module in its disconnect mode without sustained application of electrical energy via said tip channel for the duration of said off hook condition of said subscriber's handset, said module automatically responsive to proper replacement of said subscriber's handset to its supporting hook or cradle, so as to restore said selected subscriber's line to normal operation; and

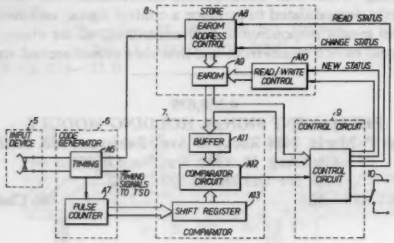
e. there being a technician in attendance at said central exchange, for scanning said subscribers' lines, detecting and determing specific off hook offenses, deciding on the necessity for corrective action, and for applying temporary electrical energy to said PSH module to disconnect and lockout a selected offending subscriber's line, said technician using supportive means of said master test frame.

4,358,640

TELEPHONE SECURITY DEVICE

Leonard Q. Murray, 20 Holland Park, London W11, England

Filed Nov. 25, 1980, Ser. No. 210,319
Int. Cl.³ H04M *1/66*
U.S. Cl. 179—90 D **12 Claims**



1. A telephone security device for preventing unauthorized use of a telephone instrument, the device comprising:

inhibit means for connection to a called number selecting means of the subscriber's set for at least partly inhibiting the operating of said selecting means;

code signal recognition means which has an input for receiving code signals and which is operable for responding to the reception thereby of first and second predetermined multiple digit numerical code signals to produce corresponding first and second mode output signals, and

mode register means which has two stable mode states, which is connected to said code signal recognition means and said inhibit means, and which is operable when it is in one of said two states to respond to the reception from the code signal recognition means of said first mode output signal to enter the other of said two states and to remain in the said other state even following disconnection of a subsequently made telephone call and when it is in said other state to respond to the reception of the second mode output signal from the code signal recognition means to enter said one state, the mode register means being further operable to control said inhibit means so that, for as long as the mode register means is in said one of said two states, the inhibit means prevents any successful attempt to use the said called number selecting means to make outgoing calls to at least some destination telephone numbers and, for as long as the mode register means is in said other state, the inhibit means is inoperative and hence allows any number of outgoing calls to be made normally,

in which the code signal recognition means comprises an electrically alterable read-only memory arranged to store the first and second predetermined multiple digit numerical code signals to which the code signal recognition means is to respond and a signal representative of an operating mode into which the device has been set by a previously received code signal.

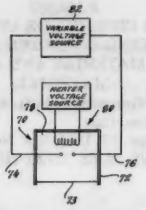
4,358,641

HIGH VOLTAGE CONTROL DEVICES

Joseph M. Proud, Wellesley Hills; James J. Auborn, Groton, both of Mass., and Richard A. Bessett, Derry, N.H., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 936,971, Aug. 25, 1978, which is a division of Ser. No. 661,677, Feb. 26, 1976, Pat. No. 4,185,206. This application Jul. 31, 1980, Ser. No. 174,082
Int. Cl.³ G01S *15/00*
U.S. Cl. 179—113 **4 Claims**

1. An acoustic pulse generator comprising an acoustically transparent housing, an aprotic liquid contained within said housing, means for effecting heat exchange with said liquid, at least two spaced electrodes contained within said liquid and each of said electrodes extending from said housing, a matching medium coupled to said housing, means for generating a



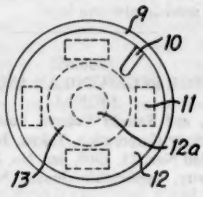
spark across the spaced electrodes to produce a pressure pulse in the aprotic liquid and means for transmitting the pulse from the liquid to the matching medium.

4,358,642

ELECTRO-MAGNETIC TYPE ELECTRIC ACOUSTIC TRANSDUCER

Ichiro Horikoshi; Shigeo Mori; Fumikazu Murakami; Yoshiaki Hara, and Susumu Fujita, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Dec. 27, 1978, Ser. No. 973,590
Claims priority, application Japan, Dec. 29, 1977, 52-159287
Int. Cl.³ H04R *19/18*
U.S. Cl. 179—115.5 R **4 Claims**



1. In a small electro-magnet acoustic transducer having an enclosure defined by a back plate, an annular supporting member on said back plate and a vibrating plate supported at its periphery by said supporting member; and having a permanent magnet, a magnetic core and an exciting coil disposed around said core all mounted in said enclosure, the improvement comprising: means defining an air hole opening from the atmosphere into said enclosure, said air hole being of a size to reduce the resonant frequency of said transducer with respect to a like transducer in which the enclosure is sealed, while maintaining the resonant sound pressure at a value at least equal to that of a like transducer in which the enclosure is sealed.

4,358,643

TWO TO FOUR WIRE HYBRID CIRCUIT

Allan Levy, Delray Beach, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Apr. 21, 1980, Ser. No. 141,780
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **6 Claims**

1. A two- to four-wire hybrid circuit for coupling a bidirectional terminal line to a transmission medium having separate branches for a receiving and a transmitting direction of analog electrical signals, said circuit comprising:

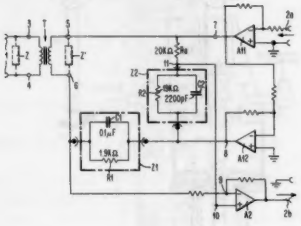
(a) a line coupling circuit having a pair of terminal connectors connected to said terminal line; and a first and a second transmission connector;

(b) first amplifying means, including an input adapted to receive respective ones of said electrical signals from said

receiving branch and a first and a second output of low impedance delivering output signals in phase opposition; said first output being connected to said first transmission connector;

(c) a first impedance designed as plug-in unit and arranged between said second output and said second transmission connector and having a value of the coupled terminal line impedance, effective at said transmission connectors;

(d) second amplifying means having a first and a second input both of high impedance and an output adapted to transmit respective ones of said electrical signals to said transmitting branch; said first input of said second amplifying means being connected to said second transmission connector;



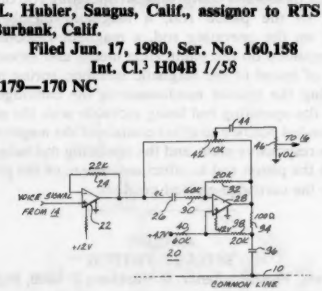
(e) a series circuit including an attenuator and a second impedance designed as plug-in unit, both connected via a connector tap, said series circuit being arranged between said outputs of said first amplifying means, said connector tap being connected to said second input of said second amplifying means wherein the values of said series circuit are chosen such that the resistance value of said attenuator is substantially higher than the value of the actual resistance component of the first impedance and the ratio of said coupled line impedance to said first impedance equals the ratio of the resistance of said attenuator to said second impedance.

4,358,644

BILATERAL CURRENT SOURCE FOR A MULTI-TERMINAL INTERCOM

Stanley L. Hubler, Saugus, Calif., assignor to RTS Systems, Inc., Burbank, Calif.

Filed Jun. 17, 1980, Ser. No. 160,158
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **9 Claims**



1. In a system having a plurality of stations for either transmitting or receiving signals over a single line pair, a two-wire to four-wire converter circuit, comprising:

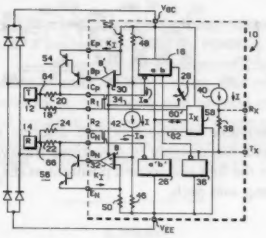
a differential amplifier having first and second input terminals and an output terminal, a signal source, means including a first resistor connecting the first input terminal of the differential amplifier to said source, asecond resistor connecting the second input terminal to a reference voltage, a first feedback resistor connecting the first input terminal to the output terminal of the amplifier, second and third feedback resistors in series connecting the second input terminal to the output terminal of the amplifier, impedance means including a potentiometer connected in shunt across the amplifier and first resistor between the source and the output terminal of the amplifier, an output load connected to the tap of the potentiometer for preventing signals from said signal source from appearing at said output load, and means connecting one wire of said line to the series junction of said second and third feedback resistors.

4,358,645

LOOP SENSING CIRCUIT FOR USE WITH A SUBSCRIBER LOOP INTERFACE CIRCUIT

Leland T. Brown, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1980, Ser. No. 175,551
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **6 Claims**



1. A loop sensing circuit for coupling between a hybrid circuit and a subscriber bidirectional transmission loop, the hybrid circuit including first and second complementary type current mirror circuits and first and second high current gain amplifiers, comprising:

first high current gain loop means coupled between a first one of the high current gain amplifiers of the hybrid circuit and a first node to a first loop terminal adapted to be coupled to the subscriber transmission loop, said first high current gain loop including first resistive means;

second resistive means coupled between said first node and an input of the hybrid circuit that is adapted to be coupled to an input of the first current mirror circuit of the hybrid circuit for conducting current therebetween;

third resistive means coupled between a second node to a second loop terminal that is adapted to be coupled to the subscriber transmission loop and an input of the hybrid circuit that is adapted to be coupled to an input of the second current mirror circuit of the hybrid circuit for conducting current therebetween; and

second high current gain loop means coupled between the second one of the high current gain amplifiers of the hybrid circuit and said second node and including fourth resistive means.

4,358,646

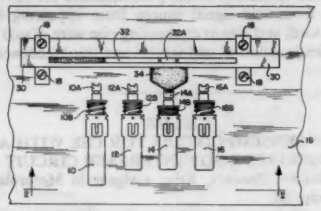
SLIDE SELECTOR SWITCH

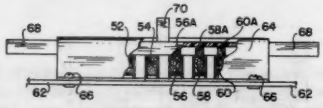
Arthur T. Martinez, Long Beach, Calif., assignor to T.A.D. Avanti, Inc., Compton, Calif.

Filed Jan. 8, 1981, Ser. No. 223,350
Int. Cl.³ H01H *3/00, 15/00*
U.S. Cl. 200—5 R **13 Claims**

1. A mechanical selector assembly including: a plurality of discrete electrical elements mounted adjacent to one another, each of said elements including a member reciprocally movable between a first and a second position; an elongated slide member mounted for reciprocal movement along a rectilinear path with respect to the electrical elements between predetermined limits; and an actuator on said slide member in position

successively to engage the respective movable members of said electrical elements as said slide member is moved along said rectilinear path between said predetermined limits so as to





cause said movable members of said discrete electrical elements to move successively in directions transversely of said path between the first and second positions as the slide member is moved along said path.

4,358,647

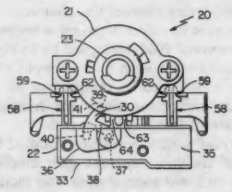
BURNER VALVE CONTROL DEVICE, AN ELECTRICAL SWITCH UNIT THEREFOR AND METHODS OF MAKING THE SAME

Roy C. Demi, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 74,157, Sep. 10, 1979, Pat. No. 4,342,886. This application May 7, 1981, Ser. No. 261,574

Int. Cl.³ H01H *9/06*

U.S. Cl. 200—61.86 **9 Claims**



1. In a combination of a burner valve control device and an electrical switch unit carried by said device and having the switch means thereof operated by movable actuator means controlled by the selector means of said device, said movable actuator means comprising a lever pivotally mounted to said switch unit to be carried thereby and engageable with said selector means of said device and said switch means of said switch unit, the improvement wherein said lever is substantially anchor-shaped and has an arcuate actuator arm means provided with opposed end means for respectively being engageable with said selector means of said device and said switch means of said switch unit, said lever having a shank portion extending substantially radially from said arm means substantially medially of said end means thereof and having an outer free end pivotally mounted to said switch unit.

4,358,648

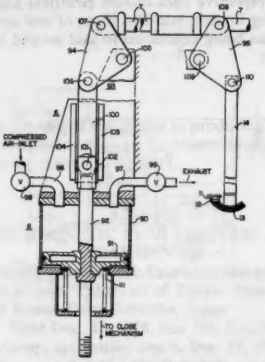
POWER CIRCUIT BREAKER WITH OPENING AND CLOSING MECHANISMS

Ronald W. Crookston, Penn Township, Westmoreland County, and Hayes O. Dakin, Jr., North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 18, 1980, Ser. No. 171,931

Int. Cl.³ H01U *33/28*

U.S. Cl. 200—150 R **9 Claims**



1. A circuit interrupter comprising a pair of separable contacts, operating means connected to the contacts for opening the contacts including a toggle lever pivotally mounted for movement between positions corresponding to closed and open conditions of the separable contacts, closing means for closing the contacts including a cylinder-piston assembly and having a piston rod operatively connected to the separable contacts, the closing means being interconnected to the toggle lever to effect latching of the contacts in the closed condition, firing chamber means for directing a propellant force into the cylinder and against the piston, propellant charge-containing cartridge removably mounted in the firing chamber means, the firing chamber means having pump slide means reciprocally movable for inserting and ejecting cartridges into and from the firing chamber means, ejector mechanism for moving the pump slide means and comprising an operating rod operatively attached to the piston rod, a magnetic member fixedly mounted on the operating rod, a magnetic-responsive plate fixedly mounted on the pump slide means and extending into the path of travel of the magnetic member, spring means for maintaining the ejector mechanism in the cartridge-inserted position, the operating rod being movable with the piston rod to an extended position to effect contact of the magnet with the magnetic-responsive plate, and the operating rod being retractable with the piston rod to effect movement of the pump slide means to the cartridge-ejected position.

4,358,649

ROTARY SWITCH

Günter Petz, Flachslanderstr. 8, Nürnberg D 8500, Fed. Rep. of Germany

Filed Dec. 4, 1980, Ser. No. 212,865

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948860

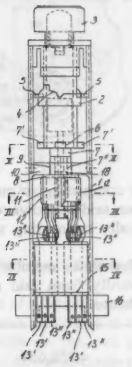
Int. Cl.³ H01H *21/80, 9/06, 3/50*

U.S. Cl. 200—153 L **9 Claims**

1. In a rotatable switch adapted to be installed in a switch panel opening, the switch including a rotatable knob, an elongated housing, a rotatable annular detent body within the housing and connected to the knob in axially spaced relationship, the detent body cooperating with at least one detent element attached to the housing for frictionally holding the knob and the detent body at a set angular position and limiting

its total angular motion, an annular rotatable cam member cooperating to open and close spring switch circuit elements, said spring switch circuit elements supported by a switch retainer within said housing and being axially spaced from said rotatable cam member, the improvement comprising:

said cam member being connected to said rotatable detent body in coaxially spaced relationship for rotation therewith, said cam member having switch controlling cams on



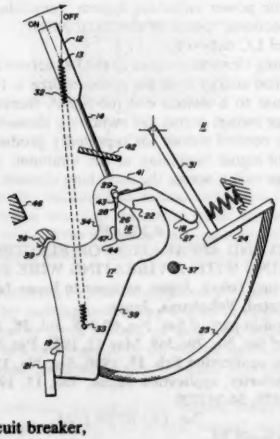
at least a portion of its surface area and being connected to said detent body through a releasable variable position connection, said spring switch circuit elements including cam follower portions engageable with said cams for controlling the opening and closing of the switch elements when the cam member is rotated, whereby adjustment of the angular relationship between said cam member and said detent body can be carried out.

4,358,650

CIRCUIT BREAKER

Alexander R. Norden, New York, N.Y., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 23, 1981, Ser. No. 227,888
Int. Cl.³ H01H *3/00, 25/00*
U.S. Cl. 200—153 H **5 Claims**



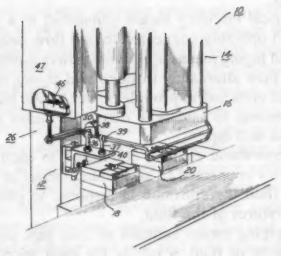
1. In a circuit breaker,
a housing;
a stationary contact affixed to said housing;
a handle adapted to be pivoted about a fixed pivot point of said housing;
a link extending from said handle;
a contact arm having
a pocket having at least one corner,
an attachment means, and
a projection;
a latching means adapted to normally block one corner of said pocket so as to provide an opening for reception of a portion of said link; said latching means, when actuated, adapted to unblock said one corner so as to permit said portion of said link to enter the remainder of said pocket;
a tensioning spring coupled between said attachment means and said fixed pivot point;
means affixed to said housing for providing a minimum distance between said attachment means and said pivot point;
a contact affixed to said contact arm; and
a barrier affixed to said housing;
whereby,
in a normal ON condition, said latching means blocks said one corner of said pocket, and said contacts are engaged, and
upon actuation of said latching means, said one corner becomes unblocked, permitting said portion of said link to enter said remainder of said pocket, whereupon said projection engages with said barrier, causing said contact arm to at least partially pivot thereabout, opening said contacts.

4,358,651

MACHINE SAFETY GUARD

Thomas E. Hostetler, New Carlisle, and Ted J. Ellis, Jr., Goshen, both of Ind., assignors to Bristol Corporation, Elkhart, Ind.

Filed Feb. 12, 1981, Ser. No. 233,927
Int. Cl.³ H01H *9/20, 3/20*
U.S. Cl. 200—334 **10 Claims**



1. A safety guard for a production machine having an emergency circuit for stopping the machine, said safety guard comprising a guard lever disposed between the hazardous area of the machine where injury can occur and the machine operator and, in a first position, forming a shield restricting access to said hazardous area and, in a second position, permitting free access to said area, pivot means for connecting said guard lever at one end to the machine, an activating arm connected to said pivot means, a switch operated by movement of said arm and said lever, a generally horizontally positioned balance arm connected to said activating arm, a weight disposed and moveable longitudinally on said balance arm for controlling the force required to move said lever and to operate said switch, and an electric circuit connecting said switch to the emergency circuit of the production machine so that movement of said guard lever to said second position interrupts the machine operating cycle through the emergency circuit.

4,358,652

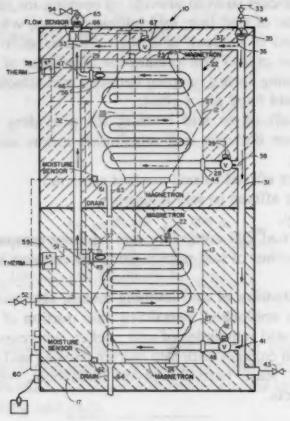
FLUID HEATER APPARATUS

Darrell R. Kaarup, 532 W. 3rd., Canton, S. Dak. 57013

Continuation-in-part of Ser. No. 971,754, Dec. 21, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 131,219

Int. Cl.³ H05B *6/78*; F24H *1/16*

U.S. Cl. 219—10.55 A **8 Claims**



1. A fluid heater apparatus for providing heated fluids only on demand, the apparatus comprising:

a housing having a pair of spaced microwave units disposed therein;

piping means connectable on one end to a source of pressurized fluid, on the other end to a tap and having a portion between said ends disposed in both of said microwave units;

flow detecting means adapted to detect a fluid flow past said tap;

electrical circuitry means connected to a source of power and operably connected to said flow detecting means and said piping means to provide power thereto to permit fluid to flow alternately through said piping means disposed in said units and to provide power to said microwave units in response to said flow detecting means detecting a flow past said tap;

a thermostatic element connected to each unit and operatively connected to said piping means to control the flow of fluid therethrough in response to predetermined temperatures of the fluid;

said piping means includes an inlet pipe connectable to the source of fluid, a tubing for each microwave unit, said tubing are mounted in parallel, a temperature sensing bulb disposed in each tubing and electrically connected to said thermostatic element of its respective unit, valving connected to each tubing and operable in response to said electrical circuitry means, and an outlet pipe connected to said tubings and connectable to said tap, wherein said valving is operable to permit fluid to flow alternately from said tubings.

4,358,653

COMBINATION MICROWAVE OVEN

Bernard J. Weiss, Barto, Pa., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 855,051, Nov. 25, 1977, abandoned. This application May 27, 1980, Ser. No. 153,982

Int. Cl.³ H05B *6/72*

U.S. Cl. 219—10.55 B **10 Claims**

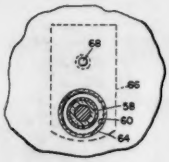
1. In combination:

A microwave conductive cavity having an aperture in a wall thereof;

means for energizing said cavity with microwave energy;

an electrical resistive heater extending through said aperture into said cavity for heating the interior thereof;

said heater comprising an elongated resistive heating element;



said heater further comprising an outer conductor shielding said element from said microwave energy;

means for electrically connecting said outer conductor to said wall; and

a tubular conductive choke member connected to said wall extending outwardly from said aperture surrounding a portion of said heater.

4,358,654

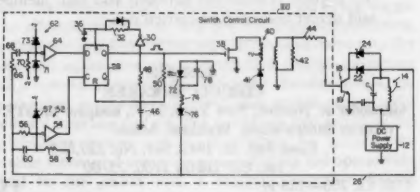
STATIC POWER SWITCHING SYSTEM FOR INDUCTION HEATING

Nelson N. Estes, 4605 Edgemont Dr., Austin, Tex. 78731

Filed Jan. 25, 1980, Ser. No. 115,190

Int. Cl.³ H05B *6/06*; H02M *7/537*

U.S. Cl. 219—10.77 **9 Claims**



1. A static power switching system comprising:

a unidirectional source of electrical power;

a parallel LC network;

a switching element coupled to the LC network for applying electrical energy from the power source to the network in response to a switch control signal, thereby producing voltage swings across the switching element; and

a switch control circuit for repeatedly producing a switch control signal beginning at the minimum point of each voltage swing across the switching element.

4,358,655

METHOD AND APPARATUS FOR ELECTROEROSION MACHINING WITH A VIBRATING WIRE ELECTRODE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation-in-part of Ser. No. 60,346, Jul. 25, 1979, which is a division of Ser. No. 796,369, May 12, 1977, Pat. No. 4,205,213. This application Feb. 15, 1980, Ser. No. 121,662

Claims priority, application Japan, Jun. 11, 1979, 54-73289; Nov. 13, 1979, 54-147238

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 M **21 Claims**

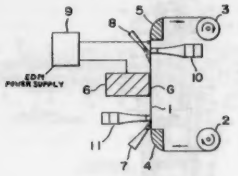
1. A method of electroerosion-machining an electrically conductive workpiece with a wire electrode which is stretched

to extend along a straight line path across the workpiece while being axially transported from a supply site to a collection site to axially travel through the workpiece continuously along said path, said method comprising the steps of:

relatively displacing said wire electrode and said workpiece transversely to the axis of said traveling wire electrode while defining a machining gap therebetween;

supplying a machining liquid to said gap;

applying a series of electrical pulses between said workpiece and said electrode to generate machining discharges



across the gap, thereby removing material from said workpiece; and

imparting a vibration of a frequency not lower than 100 Hz to said traveling wire electrode at each of two locations arranged respectively on the two opposite sides of said workpiece and in a direction transverse to the axis of said traveling wire electrode whereby the two vibrations are superimposed upon one another and result in a composite undulating oscillatory motion of said traveling wire electrode with more than two nodes and antinodes or loops of the motion along said axis in the path.

4,358,656

ELECTRON BEAM WELDING

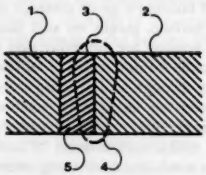
Bruno J. M. de Sivry, Paris; Claude R. Carsac, St. Leu la Foret, and Christian Bonnet, St. Gervais, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Sep. 11, 1980, Ser. No. 186,078

Claims priority, application France, Sep. 14, 1979, 79 22948

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 ED **5 Claims**



1. A process for welding first and second pieces by means of an electron beam welding operation, said first and second pieces being made of the same material and each of said pieces having an oxygen content less than 100 ppm, comprising the steps of:

forming a material, by arc welding a mild or slightly alloyed steel or by melting under slag a mild or slightly alloyed steel, directly on a surface of said first piece which is parallel to a corresponding surface of said second piece, said formed material having between 100 and 800 ppm oxygen;

placing an exposed surface of said formed material adjacent said corresponding surface of said second piece;

melting a portion of said formed material and said second piece in a vicinity of said exposed surface and said corresponding surface so as to melt a portion of said formed material and said second piece; and

cooling said melted portion, said oxygen contained in said formed material serving as seeds for the formation of acicular ferrite as said melted portion is cooled.

4,358,657

SEALING SYSTEM FOR A MOVABLE VACUUM CHAMBER OF A CHARGED PARTICLE BEAM MACHINE

Karl-Heinz Steigerwald, Starnberg; Peter Anderl; Erwin Kappelsberger, both of Munich; Clauspeter Mönch, Grafrath; Dieter König, Munich, and Wilhelm Scheffels, Puchheim, all of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

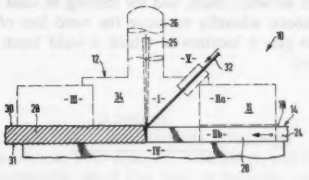
Continuation of Ser. No. 909,697, May 25, 1978, abandoned.

This application Oct. 14, 1980, Ser. No. 196,396

Claims priority, application United Kingdom, May 27, 1977, 22620/77

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 EN **5 Claims**



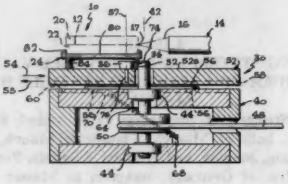
1. A sealing system for a vacuum chamber of a machine arranged to mount on a workpiece for processing said workpiece with a beam of charge particles produced by a beam gun mounted relative to said chamber so that the beam is within said vacuum chamber, said vacuum chamber being arranged to mount to said workpiece in a manner to allow relative movement with respect to the workpiece and having a beam exit opening surrounded by a circumferential seal formed by an annular end portion of said vacuum chamber and arranged to cooperate with an opposed surface of said workpiece, said seal and said chamber moveable along said workpiece surface, said seal having a radial sealing width between said beam exit opening and the surrounding environment, for sealing said beam exit opening against said surface such that said relative movement of said chamber and said seal with respect to said workpiece can take place while securing a path of high flow resistance across said seal from said surrounding environment to said vacuum chamber, said workpiece being processed while moving relative to said vacuum chamber, wherein said seal includes an entrance section through which a portion or said workpiece to be processed enters said chamber radially with respect to said seal for processing by said beam and an exit section through which a processed workpiece portion, which has a hot and relatively uneven surface compared to the unprocessed portion of said workpiece, leaves said chamber radially with respect to said seal characterized in that for improving the flow resistance of said seal, said seal has a greater radial width in the region of at least one of said entrance or exit sections of said seal than at other circumferential points, and wherein said wider part of said seal includes a housing comprising a packing of wire-shaped elements having free ends and means for pressing said free ends of said wire-shaped elements against said workpiece surface.

4,358,658

LASER WELD JIG

Peter Van Blarigan, and David L. Haupt, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 5, 1980, Ser. No. 213,267
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LC **15 Claims**



1. Apparatus for use in welding a workpiece having a lip portion extending parallel to a predetermined weld line, by the use of a welding beam, comprising:

first and second rotatable members; and

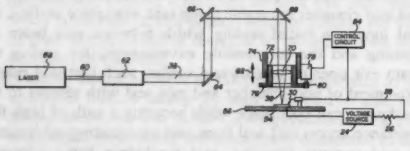
means for holding peripheral portions of said members together to enable them to grasp a lip portion of the workpiece between them, and for turning at least one of said members, whereby to move the weld line of the workpiece past a location at which a weld beam can be directed.

4,358,659

METHOD AND APPARATUS FOR FOCUSING A LASER BEAM ON AN INTEGRATED CIRCUIT

John V. Spohnheimer, The Colony, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Jul. 13, 1981, Ser. No. 282,865
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LB **9 Claims**



1. Apparatus for focusing a laser beam, comprising:

a semiconductor substrate having a first conductivity type;

a region of a second conductivity type formed in said substrate;

a layer of material which blocks said laser beam, said layer fabricated on said substrate above said region and having an opening therein to expose a portion of said substrate;

means for directing said laser beam toward said substrate;

means for detecting the generation of carriers in said substrate due to the impingement of said laser beam upon said region through said opening, and for producing a control signal proportional to the generation of said carriers; and

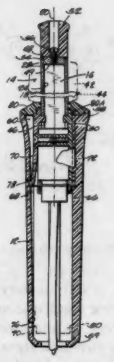
means for focusing said laser beam in response to said control signal to minimize the diameter of said laser beam at the plane of contact of said laser beam with said substrate.

4,358,660

COLLAPSIBLE ELECTRIC HAIR CURLING IRON

Matthew L. Andis, Racine, Wis., assignor to Andis Company, Racine, Wis.

Filed Feb. 11, 1980, Ser. No. 120,511
Int. Cl.³ A45D *2/08, 2/36;* H05B *3/06*
U.S. Cl. 219—222 **13 Claims**



9. A collapsible curling iron comprising a handle having opposite ends and a hollow interior with an opening at one of said ends, a heating element adapted to be connected to a source of electrical energy, a housing having oppositely spaced inner and outer ends and a longitudinal axis extending therebetween, said housing also having a bore extending along said longitudinal axis and accommodating therein said heating element, said outer end of said housing also including a generally cylindrical outer peripheral surface, and said inner end of said housing having a cap with a diameter greater than the diameter of said outer peripheral surface, a plurality of longitudinally extending and arcuately spaced rows of teeth extending radially from said housing a given distance outwardly of said outer peripheral surface, means on said handle and on said inner end of said housing for mounting said inner end of said housing in said handle for movement of said housing relative to said handle axially through said opening and along said longitudinal axis between an inoperative position in which said housing and said radially extending teeth are substantially wholly confined within said interior of said handle and an operative position in which said housing extends from said one end of said handle and said teeth are located exteriorly of said handle, and means on said one end of said handle for supporting said housing so as to prevent movement of said housing relative to said handle in a direction transverse said longitudinal axis while permitting movement of said housing between said inoperative and operative positions, said supporting means including an annular collar on said one handle end and providing said opening, said collar including a plurality of radially extending and arcuately spaced slots, said slots being axially aligned with said rows of teeth and accommodating passage of said teeth therethrough during movement of said housing between said operative and inoperative positions, said collar opening including an inner diameter slidingly engaging said housing outer peripheral surface between said arcuately spaced slots and said collar also having an interior counterbore dimensioned to snugly receive said cap of said housing when said housing is in the operative position.

4,358,661

ELECTRIC SOLDERING IRON WITH VIBRATORY SOLDERING BIT

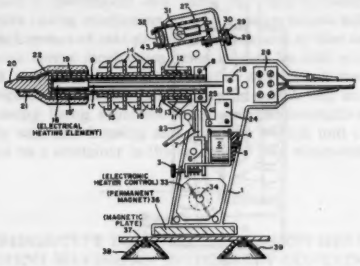
Milos Kaderabek, Raiffeisenstrasse 14 a,, D-7000 Stuttgart 31, Fed. Rep. of Germany

Filed Mar. 13, 1980, Ser. No. 130,044

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928827

Int. Cl.³ B23K *3/04, 1/06*

U.S. Cl. 219—230 9 Claims



1. An electric soldering iron comprising

an electric heating element secured at one end to an end of an elongated stem;

a casing including

a support section having means rigidly mounting the other end of the stem in the casing with the heating element extending forwardly out of the casing in cantilever fashion, and

a handle connected to the support section;

a vibrator mounted in the casing via an elastic member; an elongated soldering bit;

a resilient mounting means supporting the elongated soldering bit from said casing independently of and spaced from the heating element and stem and with the soldering bit surrounding the heating element in spaced relationship thereto for transferring thermal energy from the heating element to the soldering bit essentially by heat radiated from the heating element and said resilient mounting means being coupled to the vibrator whereby the vibrator can vibrate the resilient mounting means and the soldering bit without effecting vibration of the heating element;

means to selectively energize the heating element; and

means to selectively energize the vibrator.

4,358,662

THERMALLY ISOLATED FUME EXHAUSTING ATTACHMENT FOR SOLDERING IRONS

Benny D. Cranor, Mesquite, Tex., and Robert C. Runyon, St. Louis, Mo., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jul. 11, 1980, Ser. No. 168,950

Int. Cl.³ H05B *1/00;* B23K *3/00;* A47L *9/02*

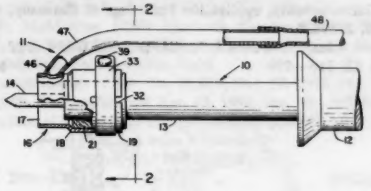
U.S. Cl. 219—230 5 Claims

1. In combination with a soldering iron having a handle, an elongated heated barrel extending from the handle and a soldering tip axially projecting from the end of said barrel, a fume exhausting device comprising:

a shell of heat conducting material positioned coaxially of the barrel and having a first end section thereof extending about the tip of the soldering iron, said first end section having a hole formed therein which is located to overlay the tip, the second end of said shell being positioned about said barrel and having at least one slot formed therein;

a sleeve of compressible thermal insulating material positioned within the second end of the shell and interposed between the shell and the barrel of the soldering iron for thermally insulating the shell from the heated barrel;

a band of flexible material positioned about the slotted second end of the shell;



means tightening the band to collapse the slotted end of the shell and compress the insulating sleeve against the barrel and hold the shell in position; and

means extending from said hole for exhausting vapors from about the tip.

4,358,663

HEATER PLUG FOR DIESEL ENGINES

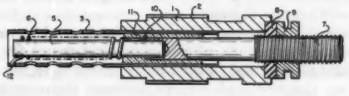
Franz Sperner, Hanau; Fritz Aldinger, Rodenbach, and Wilhelm Zwergel, Freigericht, all of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Jan. 11, 1980, Ser. No. 111,433

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2900984

Int. Cl.³ F23Q *7/22*

U.S. Cl. 219—270 27 Claims



1. A heater plug comprising an electrically conductive heater coil connected to an electrically conductive terminal pin, said terminal pin maintained in gas-tight manner at least in part within and insulated from an electrically conductive plug shell, at least the surface of said heater coil formed of a metal of the platinum group, said heater coil supported by a heat resistant electrically insulating rod-like supporting body attached to said terminal pin, said heater coil being surrounded by a heat resistant electrically conductive protective tube made of metal and electrically connected at its other end to the end of said electrically conductive protective tube, said protective tube having openings over its circumference of number and size sufficient to permit fuel and air to pass to said heater coil, said protective tube having an opening at one end, said electrically conductive heater coil being electrically insulated along said protective tube, except for the terminal connecting portion, the wire of said heater coil comprising a core over which there is disposed a cladding, said cladding having a thickness of from 5 to about 50μ and said core having a diameter of 150 to 400μ.

4,358,664

ELECTRIC HEATING DEVICE FOR HEATING THE FLOW OF GLUE TO A LABELING MACHINE

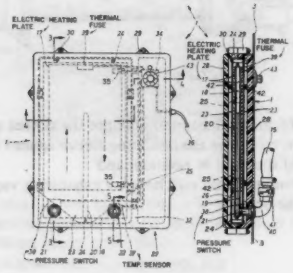
Hermann Kronseder, Regensburger Strasse 42,, 8404 Worth-/Donau, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 186,939

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939036

Int. Cl.³ F24H *1/12;* **B67D** *5/62;* **H05B** *1/02*

U.S. Cl. 219—299 **6 Claims**



1. Apparatus for heating cold glue for use in labelling machines and the like, comprising:

a pair of thin metal planar members spaced apart and in parallelism with each other, said members being joined to each other at their edges to thereby define a conduit for fluid glue between the interior surfaces of the members,

holes in a planar member and tubular elements respectively fastened to said member coincident with the holes to provide an inlet and an outlet for glue to flow through the conduit,

a pair of generally planar electric heating elements respectively interfaced with the surfaces of the planar members exterior to the conduit, said heating elements making contact with a major portion of the area of the exterior surfaces,

a pair of support plates arranged in parallelism with each other and respectively in interfacing relation with said planar heating elements, the opposite margins of said plates extending beyond the margins of said conduit and said heating elements,

spacer block means, respectively, interposed between corresponding margins of said plates and means for clamping said plates to said spacer block means to secure said heating elements and conduit between them such that the support plates, the spacer block means, the heating elements and the conduit are composed as a unit for being supported on said spacer blocks,

a housing for said unit having opposed walls which define a cavity into which said unit fits with substantial air space around most of the unit for inhibiting heat transfer through the housing.

4,358,665

THERMAL CUT-OUT ARRANGEMENT FOR AN ELECTRIC WATER HEATER

William G. S. Owen, Langstone near Newport, England, assignor to IMI Santon Limited, Newport, Great Britain

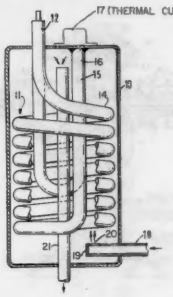
Filed Jun. 9, 1980, Ser. No. 157,840

Claims priority, application United Kingdom, Jun. 15, 1979, 7920980

Int. Cl.³ H05B *1/02, 3/82;* **F24H** *1/20*

U.S. Cl. 219—306 **4 Claims**

1. An electric water heater of the type which heats the water immediately before use as the water passes through a container, the heater comprising a closed container, a continuous electric immersion heating element extending within the container, a water inlet to and a water outlet from the container and a thermal cut-out device in circuit with the heating element and mounted on the exterior of the container and adapted to cut off electric current to the heating element at a predetermined temperature, wherein the heating element has a helically coiled portion and a generally U-shaped portion extending from said helically coiled portion, the closed part of said generally U-shaped portion extending substantially into thermal contact with the interior wall of the container directly confronting the thermal cut-out device, the helically coiled portion of the heating element being positioned between the water inlet and the portion of the container wall confronting the thermal cut-out device, and the water inlet being arranged so as to discharge cold water into the interior of the helically coiled portion such that the water moves in an unbaffled manner within the helically coiled portion toward the confronting wall portion of the container, whereby preventing "nuisance tripping" of the thermal cut-out.



4,358,666

WATER-BOILING CONTAINER WITH SWITCH-ON-DRY AND STEAM SENSITIVE THERMALLY RESPONSIVE CONTROL UNITS

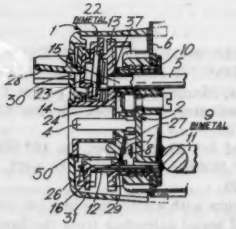
John C. Taylor, 9 Homefield Park, Ballasalla, Castletown, Isle of Man

Filed Jan. 16, 1980, Ser. No. 112,798

Claims priority, application United Kingdom, Jan. 15, 1979, 7901400; Mar. 23, 1979, 7910289

Int. Cl.³ H05B *1/02;* **H01H** *37/54;* **H05B** *3/82;* **A47J** *27/62*

U.S. Cl. 219—330 **13 Claims**



1. In a water boiling container having an electric heating element for heating liquid contained therein, the improvement comprising a thermally-responsive electrical control for controlling operation of said heating element, said control including a switch-on-dry protector switch unit enclosed by a first housing and adapted to make electrical connection with the cold ends of said electric heating element of said container and including thermally sensitive switch means effective, in use, to interrupt the electrical supply to the heating element should

the element overheat through being switched on when the container is dry, said control further including a steam-sensitive unit enclosed by a second, separate housing removably mounted on said protector switch unit housing, said steam-sensitive unit including an overcentre spring mechanism and a thermally-responsive actuator for operating said mechanism, the control including means for the impingement on said actuator of said steam-sensitive unit of vapor or steam issuing from the outlet of a passage leading to the interior of the container, the electrical parts of said protector switch unit being shielded from such vapor or steam by a body portion of said steam-sensitive unit, a mechanical link being provided between said overcentre spring mechanism of said steam-sensitive unit and the switch means of said protector switch unit so that on said overcentre spring mechanism being tripped by said actuator, said link serves mechanically to operate said switch means of the protector switch unit, said protector switch unit and said first housing being separable from said steam-sensitive unit whereby said first housing and protector switch unit can be mounted on a container in the absence of said steam-sensitive unit.

4,358,667

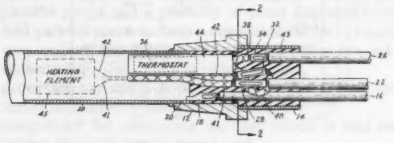
CARTRIDGE-TYPE ELECTRIC IMMERSION HEATING ELEMENT HAVING AN INTEGRALLY CONTAINED THERMOSTAT

Ronald S. Johnson, Limington, and Stephen E. Hasty, Kezar Falls, both of Me., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 861,382, Dec. 16, 1977, abandoned. This application Apr. 10, 1980, Ser. No. 138,773

Int. Cl.³ H05B *1/02, 3/82;* **H01H** *37/04;* **H01C** *1/03*

U.S. Cl. 219—331 **7 Claims**



1. An electrical heater having an integrally contained, self-limiting thermostatic control included in its electrical circuit, comprising:

a tubular sheath means having an open end, wherein said sheath means is partially filled with compacted powdered insulating material to form a cavity at said open end;

electrical heating means embedded in said insulating material;

a preset-temperature thermostat means for opening the circuit therethrough at a preset temperature;

power supply leads for connecting said electrical heater to a power source, wherein said leads terminate at one end thereof in said cavity;

wiring means inside said sheath means for connecting said power supply lead ends, said electrical heating means, and said thermostat means in series for causing said heating means to de-energize when said thermostat means reaches said preset temperature, wherein a portion of said wiring means is in said cavity;

a thermostat sleeve having said thermostat means therein and an end embedded in said insulating material and holding said thermostat means in close proximity with said sheath means, wherein said sleeve is inside, and in close proximity with, said sheath means and a portion of saod sleeve occupies, and the other end of said sleeve terminates in, said cavity;

a body of potting compound completely filling the remainder of said cavity, sealing said open end of said sheath means and encapsulating said other end and said portion of said sleeve and said portion of said wiring means and said power supply lead ends in said cavity, wherein said body of potting compound and said compacted powdered insulating material cooperate to hold securely said thermostat sleeve in position.

4,358,668

HEATER WITH REINFORCING STRATE

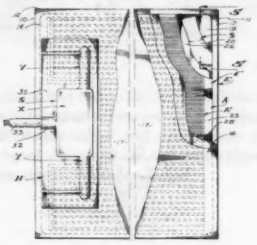
James P. McMullan, 12300 Monarch, Garden Grove, Calif. 92641, and Albert Stevens, Orange, Calif., assignors to James P. McMullan, Garden Grove, Calif.

Continuation-in-part of Ser. No. 86,400, Oct. 19, 1979, Pat. No. 4,270,040. This application Apr. 13, 1981, Ser. No. 253,354

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.³ H05B *3/34*

U.S. Cl. 219—528 **20 Claims**



1. A flat, normally horizontal, flexible blanket type heater structure comprising a thin, horizontal reinforcing strate of flexible and resilient dimensionally stable material having flat top and bottom surfaces and outside edges, a thin, flat carrier sheet of flexible dielectric material of limited dimensional stability having flat top and bottom surfaces and outside edges positioned with its bottom surface in flat opposing engagement with the top surface of the strate, an elongate, metallic electric resistance element on and arranged to extend throughout the major portion of the top surface of the carrier sheet with each portion thereof in spaced relationship from other portions thereof, said element has end portions extending to a portion of the carrier sheet spaced from the element and joined with electric terminals carried by the carrier sheet, a flat, horizontal envelope of flexible dielectric sheet material of limited dimensional stability with top and bottom layers and outside edges engaged with and about the strate, carrier sheet and element and normally holding the strate, carrier sheet and element and normally holding the strate and carrier sheet in surface to surface engagement and against movement relative to each other and having an access opening through which the terminals extend.

4,358,669

ELECTRIC HEATING ELEMENTS

Charles E. Bryson, Jr., Murfreesboro, Tenn., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 17, 1981, Ser. No. 293,156

Int. Cl.³ H05B *3/06*

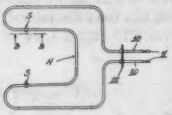
U.S. Cl. 219—542 **5 Claims**

1. An electric heating element for browning food in a microwave oven having a metal bottom wall, said heating element comprising an elongated tubular metal sheath, a resistance coil within said sheath and held spaced from the inner wall of the latter by compacted refractory material, said heating element having a terminal portion at an end thereof and an active heating portion inwardly of such end, said terminal portion being connected to a side wall of said oven in cantilever fashion so that said active heating portion closely overlies the bottom wall of said oven, the improvement comprising:

a support for maintaining said active heating portion in predetermined spaced relation above said oven bottom

wall, free of arcing between said support and said bottom wall but without mechanical or fused connection therebetween,

said support comprising a wire leg shaped to provide a bight and legs extending from said bight, and further comprising a block of rigid insulating material having a bottom surface adapted to engage and rest on said oven bottom wall, said block having a slot opening from said bottom surface and providing a segment interiorly of said block, said slot being of a shape to receive said wire leg with said bight



under and around said segment and spaced from said bottom surface sufficiently to prevent arcing between said bight and said oven bottom wall, and said legs extending upwardly on opposite sides of said segment, the free ends of said legs being firmly connected to said sheath in spaced-apart relation to hold said block in position wherein its upper surface is engagable with that part of the sheath between said legs to restrict upward movement of said block and thereby maintain said segment within the confines of said bight and legs.

4,358,670

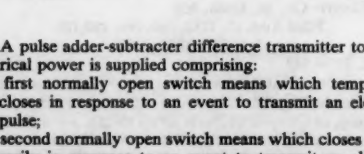
PULSE ADDER—SUBTRACTER DIFFERENCE TRANSMITTER

John W. Medlin, 6413 Edgemoor, Houston, Tex. 77074

Filed Apr. 4, 1980, Ser. No. 137,318

Int. Cl.³ G06M *3/14*

U.S. Cl. 235—92 CT **1 Claim**



1. A pulse adder-subtracter difference transmitter to which electrical power is supplied comprising:

a. first normally open switch means which temporarily closes in response to an event to transmit an electrical pulse;

b. second normally open switch means which closes temporarily in response to an event to transmit an electrical pulse;

c. movement means, said movement means including:

a lead screw;

an add solenoid;

a subtract solenoid;

means mechanically linking each said add and said subtract solenoid to said lead screw with said add solenoid being responsive to the pulse from said first switch means to move said lead screw in one direction and said subtract solenoid being responsive to the pulse from said second switch means to move said lead screw in the opposite direction whereby the resulting movement of said lead screw is proportional to the sum of the difference between the pulses from said first and second switch means;

d. response means which consists of a pneumatic pressure regulator connected to a pneumatic pressure source, said pneumatic pressure regulator being responsive to the position of said lead screw to provide a pneumatic pressure output signal from said pressure regulator which is proportional to the position of said lead screw.

4,358,671

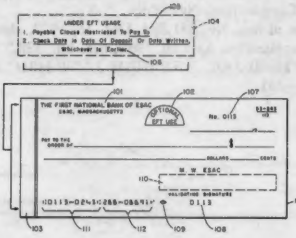
CHECK PROCESSING SYSTEM

John M. Case, 35 Lehigh Rd., Wellesley, Mass. 02181

Continuation-in-part of Ser. No. 75,510, Sep. 13, 1979, abandoned. This application Jun. 24, 1981, Ser. No. 276,928

Int. Cl.³ G06K *1/14*

U.S. Cl. 235—379 **5 Claims**



1. A system for processing checks in EFT procedures comprising:

(a) a check in the form of a document provided with a machine readable element located at a preselected position in one of the optional ABA standard's positions in the marginal edge of documents reserved for MICR imprintation, said position being preselected to define the nature of the document as a check susceptible to be processed by EFT procedures;

(b) said check being printed with a set of MICR characters along said marginal edge, said characters defining information required to enable the transfer of funds to be carried out, said check also having a predetermined space upon which the signature of the maker is to be written;

(c) sorting means into which said check is fed by the payee with whom the documents are deposited, said sorting means being adapted to segregate said check in response to the detection by said sorter of the presence and position of said machine readable element;

(d) a transit device being adapted to deliver said segregated check into a check signal encoder;

(e) said signal encoder being adapted to encode into message form said printed MICR information and also being adapted to visually scan said signature space and to encode the image of said signature into message form;

(f) message transmitting means for transmitting said encoded messages through clearance channels to the drawee; and

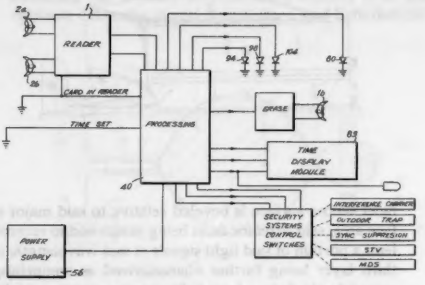
(g) means at said drawee for decoding the signature message and for reproducing a substantial duplicate of said signature upon a confirmation ticket.

4,358,672

PAY PER VIEW TELEVISION CONTROL DEVICE

Robert K. Hyatt, Burlington, Conn., and Robert F. Jacobs, Irvington, N.Y., assignors to The TeleMine Company, Inc., New York, N.Y.

Filed May 16, 1980, Ser. No. 150,420
Int. Cl.[3] G06K 5/00
U.S. Cl. 235—380 13 Claims



1. Apparatus for providing access to an electrically controlled service for predetermined periods of time comprising:

a record medium adapted to have encoded thereon data indicative of a definite time period during which access to said service is to be permitted,

a reader adapted to receive said record medium and store the data encoded thereon,

said reader including a sensor for sensing the presence of said card therein and a housing having two closely spaced parallel plates and a plurality of posts disposed between said parallel plates to form a channel for slidably receiving said medium and guiding said record medium toward said sensor while preventing skewing thereof,

a processor including a clock network having an output signal indicative of instantaneous time,

a comparator for comparing the data stored in said reader with said clock output signal, and

a security control device operable in at least two states, one of said states permitting access to said service and the other of said states preventing access to said service, said security device being responsive to said comparator for permitting and preventing access to said service as a function of the data encoded on said record medium.

4,358,673

STEERED SUM LOW COST AUTO FOCUS SYSTEM

John C. Wittenberger, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 4, 1980, Ser. No. 212,918
Int. Cl.[3] G01J 1/36
U.S. Cl. 250—204 14 Claims

1. Apparatus for use in a range finding system comprising:

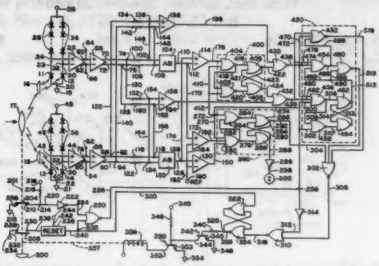
first and second pairs of radiation responsive detectors operable to produce output signals a_1, b_1, a_2 and b_2 respectively indicative of the radiation each detector receives from a remote object;

first means connected to said radiation detectors to receive the output signals and operable to produce a first comparison signal indicative of the slope of a line generated by the values of a_1 and b_1 and a second comparison signal indicative of the slope of a line generated by the values of a_2 and b_2;

second means connected to said first means to receive the first and second comparison signals and operable to produce a sum signal representative of the sum of the first and second comparison signals;

third means connected to said first means to receive the first and second comparison signals and operable to produce a difference signal representative of the difference between the first and second comparison signals; and

signal steering means connected to said second means and said third means and operable to compare the magnitudes



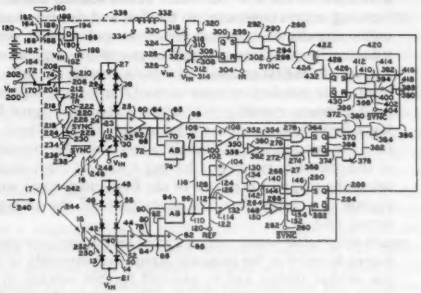
of the sum signal and the difference signal and operable to transmit the sum signal whenever the sum signal is greater than the difference signal and operable to transmit the difference signal whenever the difference signal is greater than the sum signal.

4,358,674

STEERED LOW COST AUTO FOCUS SYSTEM

James H. Frazier, Aurora, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Dec. 4, 1980, Ser. No. 212,930
Int. Cl.[3] G01J 1/36
U.S. Cl. 250—204 12 Claims



1. Apparatus for use in a range finding system comprising:

first and second pairs of radiation responsive detectors operable to produce output signals a_1, b_1, a_2 and b_2 respectively indicative of the radiation each detector receives from a remote object;

first means connected to said radiation detectors to receive the output signals and operable to produce a first comparison signal indicative of the slope of a line generated by the values of a_1 and b_1 and a second comparison signal indicative of the slope of a line generated by the values of a_2 and b_2; and

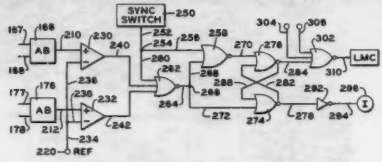
signal steering means connected to said first means and operable to compare the magnitudes of the first and second comparison signals and to transmit the first comparison signal whenever the first comparison signal has a greater slope than the second comparison signal and to transmit the second comparison signal whenever the second comparison signal has a greater slope than the first comparison signal.

4,358,675

LOW CONTRAST DEFAULT FOR AUTO FOCUS SYSTEM

James H. Frazier, Aurora, and John C. Wittenberger, Littleton, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 5, 1980, Ser. No. 213,437
Int. Cl.[3] G01J 1/36
U.S. Cl. 250—204 9 Claims



1. Apparatus for use with an auto focus system which produces a first signal that is a function of the slope of a first curve determined by the values of a_1 and b_1 and a second signal that is a function of the slope of a second curve determined by the values of a_2 and b_2 where a_1, b_1, a_2 and b_2 are the outputs of two pair of radiation detectors mounted to receive radiation through focus lens means from a scene containing an object to be focused upon, the system including motive means operable to move the focus lens from a first position through a proper focus position to a second position, the scene being such that the slope of the first and second curves may be insufficient to provide satisfactory operation of the system, the improvement comprising:

a first absolute value circuit connected to receive the first signal and to produce a first output signal that is a function of the absolute value of the first signal;

a second absolute value circuit connected to receive the second signal and to produce a second output signal that is a function of the absolute value of the second signal;

comparing means connected to the first and second absolute value circuits to compare the first and second output signals with a reference signal of magnitude indicative of a value of the first and second signals considered sufficient to provide satisfactory operation of the system, said comparing means operable to produce a resultant signal having a first characteristic when the magnitude of both the first and second output signals is less than the magnitude of the reference signal and having a second characteristic when the magnitude of one of the first and second output signals is greater than the magnitude of the reference signal; and

means connected to the motive means and to said comparing means to receive the resultant signal and operable to stop the motive means and to prevent further motion of the focus lens at a predetermined position when the resultant signal has the first characteristic.

4,358,676

HIGH SPEED EDGE ILLUMINATION PHOTODETECTOR

Richard B. Childs, Tarrytown, and Peter S. Zory, Jr., Ossining, both of N.Y., assignors to Optical Information Systems, Inc., Elmsford, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,900
Int. Cl.[3] H01J 40/14
U.S. Cl. 250—211 J 12 Claims

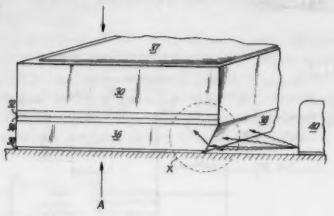
1. A high speed photodetector for detecting light signals of wavelength λ, said detector comprising:

a substrate having a major area surface;

a first layer of semiconductor material, deposited on said substrate's major area surface;

a second layer of semiconductor material, contiguous with said first layer and forming a semiconductor junction thereto, said second layer being substantially absorptive of said light signals and further characterized as having a thickness T greater than about an absorption length a and less than about L being a diffusion length of minority carriers in said layer;

a third layer of semiconductor material of a thickness greater than said second layer and having at least one detector



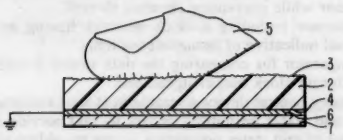
facet whose surface is beveled relative to said major surface area, said detector facet being positioned to receive at least a portion of said light signals at said wavelength, said third layer being further characterized as comprising a material which is substantially transparent to said light signal.

4,358,677

TRANSDUCER FOR FINGERPRINTS AND APPARATUS FOR ANALYZING FINGERPRINTS

Hartwig Ruell, and Wolfgang Feix, both of Mt. Laurel, N.J., assignors to Siemens Corporation, Iselin, N.J.

Filed May 22, 1980, Ser. No. 152,513
Int. Cl.[3] H01J 3/14; G06K 9/00
U.S. Cl. 250—216 7 Claims



1. In an apparatus for the identification of fingerprints having a fingerprint sensing member with a sensing surface and means for interrogating the sensing surface with a light beam, whereby the light beam is modulated in accordance with the structure of the fingerprint, the improvement comprising

the sensing surface having a random surface roughness and being made of a material having a softening temperature greater than ambient temperature and close to human body temperature such that when a finger is placed onto the sensing surface, portions of the material will soften to disturb the random surface roughness in accordance with the geometrical structure of the print of the finger, the roughness of disturbed portions of the sensing surface serving to scatter light differently from the roughness of the undisturbed portions.

4,358,678

FIBER OPTIC TRANSDUCER AND METHOD

William R. Lawrence, Houston, Tex., assignor to Hersey Products, Inc., Dedham, Mass.

Filed Nov. 19, 1980, Ser. No. 208,245
Int. Cl.[3] G02B 5/14
U.S. Cl. 250—227 24 Claims

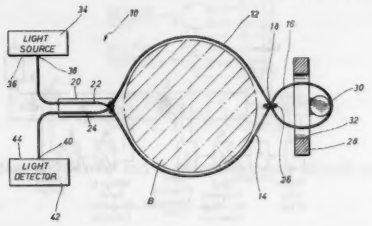
1. An optical fiber transducer for detecting mechanical movement, comprising:

a length of a single optical fiber defining two extremities and

having an intermediate portion thereof formed to define a region of bend having a variable radius of curvature that develops perturbance responsive to change of curvature;

an optical transmitter being optically coupled to one extremity of said optical fiber and transmitting light into said optical fiber;

a light detector means being optically coupled to the opposite extremity of said optical fiber and being capable of detecting the intensity of light being emitted from said opposite extremity of said optical fiber, said light detector



means being responsive to the change to light intensity that results from change of curvature of said bend and thus being responsive to the physical phenomenon inducing said change in the radius of curvature of said bend; and

signal generating means being coupled to said light detector means and generating electrical signals that are responsive to the intensity of light being detected by said light detector means, said electrical signals being representative of the state of perturbance of said optical fiber in said region of bend.

4,358,679

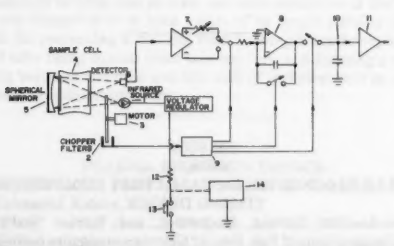
CALIBRATION OF ANALYZERS EMPLOYING RADIANT ENERGY

Phillip C. Lipoma, Dickinson, Tex., assignor to Astro Safety Products Inc., League City, Tex.

Filed Sep. 2, 1980, Ser. No. 183,460

Int. Cl.³ G01D *18/00*; G01J *1/00*

U.S. Cl. 250—252.1 **10 Claims**



1. The method of calibrating an analyzer in which differential absorbance of radiant energy between an analytical interference filter and a reference interference filter is converted into an output signal useable as a measure of a specific constituent content of a gas or liquid being analyzed, which comprises changing the radiant energy source color temperature by a precise increment which, when the analyzer is in calibration, will cause the output signal to indicate a known amount of change in the differential absorbance and adjusting the analyzer to indicate said known amount of change in the differential absorbance.

4,358,680

CHARGED PARTICLE SPECTROMETERS

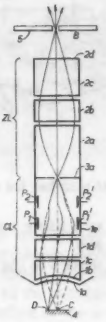
Frank H. Read, Macclesfield, England, assignor to Kratos Limited, Urmston, England

Filed Nov. 26, 1980, Ser. No. 210,825

Claims priority, application United Kingdom, Nov. 30, 1979, 7941332; Nov. 30, 1979, 7941333

Int. Cl.³ H01J *40/00*

U.S. Cl. 250—305 **9 Claims**



1. An electron spectrometer comprising a hemispherical analyzer, means for irradiating a sample located in a sample position to cause electrons to be emitted therefrom, an electron optical lens system which includes a plurality of lens elements and electron deflection elements defining at least two stages of deflection for receiving the electrons emitted from any desired position on the sample and delivering the received electrons to the analyzer, a detector connected to the analyzer to detect analyzed electrons and energizing means for applying potentials to the elements such that electrons which are ejected from a restricted selected area of the sample are brought to a focus by the lens system, and wherein the electron optical lens system includes at least two spaced apart mesh elements at the entry to the lens system, the mesh elements being concave toward the sample position so that aberrations of the lens system can be reduced and the energizing means in a first mode apply a first set of potentials to the lens elements and deflection elements such as to retard electrons passing between the mesh elements to effect refraction of the electrons in such a way as to minimise the aberrations of the lens system and permit collection of the electrons emitted over a wide acceptance angle from a selected area of small dimensions (viz. less than one square millimeter) and at any desired position on the sample and to provide high magnification, and in a second mode apply a second set of potentials to the lens elements and deflection elements so as to accept electrons from an irradiated area which is many times larger than for the first mode, and means for switching the potentials on the lens elements and on the deflection elements to switch the spectrometer between different modes of operation without mechanical modification of the lens elements.

4,358,681

CORONA DISCHARGER

Yujiro Ando, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 27,726, Apr. 6, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,005

Claims priority, application Japan, Apr. 14, 1978, 53/43993; Dec. 8, 1978, 53/151774

Int. Cl.³ H01T *19/04*

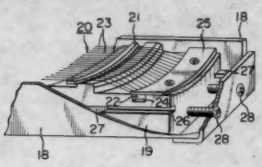
U.S. Cl. 250—324 **22 Claims**

1. A corona discharger for applying corona discharge onto an image bearing member comprising:

a corona discharge electrode;

a shield member, having a discharge opening, for partially surrounding the electrode;

a grid including a pair of fixing members and a number of fine conductive wires, wherein said fixing members include means for clasping and holding the opposite ends of said conductive wires;



an insulating support member for stretching and supporting said grid;

means for locking said fixing members to said insulating support member; and

means for applying tension to the grid wires.

4,358,682

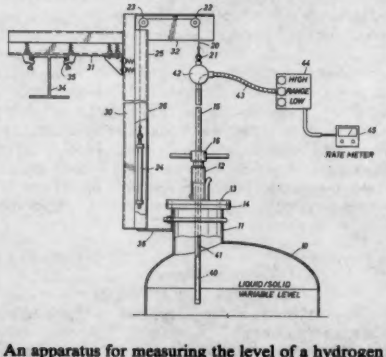
NEUTRON INTERFACE DETECTOR

Alexander Telfer, Houston, and Dale H. McMillan, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 7, 1980, Ser. No. 165,993

Int. Cl.³ G01N *23/00*; G01T *3/00*

U.S. Cl. 250—357.1 **6 Claims**



1. An apparatus for measuring the level of a hydrogen containing material in a closed vessel, said apparatus comprising: a tubular member having a closed end that is positioned in said vessel; a probe comprising a source of fast neutrons and means for detecting thermal neutrons, said probe being sized so that it can be inserted in said tubular member; a suspension means coupled to said probe to raise and lower said probe in said tubular member; and counting means coupled to said detecting means for counting the number of thermal neutrons detected.

4,358,683

INSTALLATION FOR DETERMINING THE TEMPERATURE OF THE HEATER COIL OF AN X-RAY TUBE

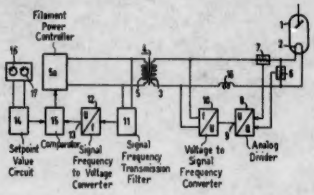
Gerd Seifert, Spardorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,534

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949331

Int. Cl.³ H05G *1/26*; G01K *7/16, 13/00*

U.S. Cl. 378—101 **4 Claims**



1. An installation for determining the temperature of the heating coil of an x-ray tube, characterized by means (6, 7, 8) for measuring the coil resistance and for forming a corresponding electric signal, and a memory (14) for storing setpoint values which are a function of coil resistances measured during fluoroscopy and radiography and for supplying said setpoint values in the transition times between fluoroscopy and radiography.

2. An installation for determining the temperature of the heating coil of an x-ray tube, characterized by means (6, 7, 8) for measuring the coil resistance and for forming a corresponding electric signal, and further including a filament power controller (5a), said means (6, 7, 8) for measuring the coil resistance being connected to said filament power controller (5a) for influencing the filament power supplied to the heating coil (2).

4,358,684

X-RAY DIAGNOSTIC INSTALLATION COMPRISING A TIMING DEVICE

Hans-Joachim Greiner, Buckenhof, and Werner Saalfrank, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,463

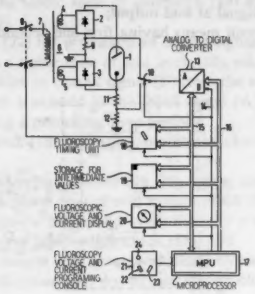
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007621

Int. Cl.³ A61B *6/00*; H05G *1/26, 1/46*

U.S. Cl. 378—98 **4 Claims**

1. In an x-ray diagnostic installation comprising a timing device (18) for determining the fluoroscopy time, and programming and display means (21) for preselection of desired fluoroscopic parameters and display of instantaneous values of such fluoroscopic parameters, the improvement comprising an arithmetic unit (17) having means (15) for supplying thereto signals corresponding to the fluoroscopy tube voltage, the

fluoroscopy tube current, and a measure of the fluoroscopy time, and being operable to form the arithmetic mean values of



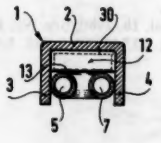
tube voltage and current and to effect the display of such mean values.

4,358,685

COOLED FILM CASSETTE FOR GAMMA RADIOGRAPHY

Jean Carton, Le Bourget, France, assignor to Alsthom-Altantique, Paris, France

Filed Oct. 7, 1980, Ser. No. 194,728
Claims priority, application France, Oct. 10, 1979, 79 25192
Int. Cl.³ G01N *23/04;* G03B *41/18*
U.S. Cl. 250—475.2 **5 Claims**



1. A cooled film cassette for gamma radiography, the cassette comprising: a channel section bar including a web joining two flanges, said bar being made of a metal which is a good conductor of heat; and at least one tube welded to at least one of said flanges over at least a part of its length parallel to the web for conveying a cooling fluid flowing therethrough, and said tube being spaced from said bar web and forming a space lying between the tube and the web of sufficient size to carry a gamma radiography film.

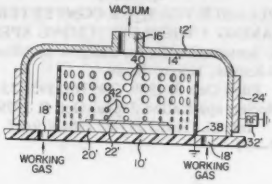
4,358,686

PLASMA REACTION DEVICE

Shigeji Kinoshita, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 23, 1981, Ser. No. 227,675
Claims priority, application Japan, Jan. 25, 1980, 55/8177
Int. Cl.³ H01J *37/00;* G01K *1/08*
U.S. Cl. 250—492.2 **6 Claims**

1. A plasma reaction device for treating semiconductor workpieces comprising; means defining a cylindrical rection chamber connectable to a working gas supply source of a gas for treating semiconductor workpieces therein; a cylindrical exterior electrode disposed circumferentially of said reaction chamber externally thereof; a cylindrical interior electrode disposed interiorly of said reaction chamber spaced inwardly from inner surfaces thereof; a workpiece stage disposed within said interior electrode for supporting a workpiece for treatment interiorly of said interior electrode; a high frequency power source connected across said electrodes for applying thereto a high frequency voltage effective to excite the working gas in said reaction chamber to develop a plasma between the electrodes; said interior electrode having a plurality of plasma-diffusion through-holes distributed and dimensioned to effectively obtain a substantially uniform plasma concentration on a surface of said workpiece being treated and exposed to the interior of said reaction chamber; the plasma-diffusion through-holes being arranged and dimensioned so that an opening-to-surface ratio of said interior electrode at a portion



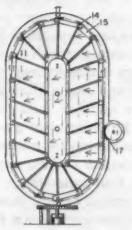
close to said workpiece is relatively small and is relatively large on a portion of the interior electrode more remote from said surface of the workpiece, whereby the concentration of plasma on said surface of the workpiece is substantially uniform throughout the surface of the workpiece; and said ratio being obtained by dividing the total cross section area of the through-holes by the remainder of the total surface area of the interior electrode less the total area of the through-holes in terms of a unit area of the interior electrode.

4,358,687

WIND POWERED GENERATOR

Wladimir Nyc, 5254 San Jose Blvd., Jacksonville, Fla. 32207

Filed Nov. 3, 1980, Ser. No. 202,936
Int. Cl.³ F03D *5/02*
U.S. Cl. 290—44 **2 Claims**



1. A wind driven electrical power generator device comprising:

a. A frame
b. An inner elongated orbital slot mounted about a central elongated vertical axis of said frame
c. An outer elongated orbital slot mounted about same central elongated vertical axis of aforesaid frame
d. A plurality of blades rotatably mounted between inner elongated orbital slot and outer elongated orbital slot
e. A connection means for said plurality of blades to rotate freely about aforesaid central elongated vertical axis while properly positioned between inner elongated orbital slot and outer elongated orbital slot
f. Aforesaid inner elongated orbital slot, having a distorted slot width at strategic locations near the top and bottom orbital positions to permit said plurality of blades to maintain an optimum attitude to intercept wind throughout their rotation about said central elongated vertical axis
g. A continuous gear train rotatably mounted about said outer elongated orbital slot

h. A connection means for said continuous gear train with aforesaid plurality of blades, so that continuous gear train rotates freely with plurality of blades about aforesaid central elongated vertical axis

i. An electrical power generator

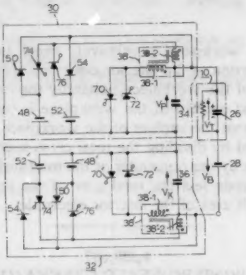
j. A means to engage said continuous gear train with said generator to rotate said generator thereby producing electricity.

4,358,688

CONTROLLABLE VOLTAGE CONVERTER SYSTEM HAVING A HIGH SWITCHING SPEED

Seizo Tamii, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1980, Ser. No. 195,113
Claims priority, application Japan, Oct. 8, 1979, 54-130660
Int. Cl.³ H01J *29/80*; H04N *9/27*
U.S. Cl. 307—77 **3 Claims**



1. A voltage converter system for a capacitive load comprising: a fixed voltage source connected serially to said capacitive load, and at least one variable voltage source connected across a series combination of said capacitive load and fixed voltage source, said variable voltage source including a capacitance operatively coupled to said capacitive load, a reactor having a pair of windings electromagnetically coupled and connected to each other, first circuit means formed of said capacitance, one of said reactor windings and a first switch means interconnected serially to one another, said first switch means being controlled to invert the polarity of a voltage charged on said capacitance, and a second circuit means including a low impedance DC source, second switch means, the other of said reactor windings and said capacitance interconnected serially to one another, said second circuit means either charging said capacitance from said low impedance DC means in the steady state or responding to a reaction applied thereto through the other winding of said reactor upon inverting the polarity of the voltage across said capacitance, to bias reversely said second switch means so as to thereby stop the charging of said capacitance, wherein the voltage across said capacitive load is stepwise controlled in response to the control effected by said first switch means.

4,358,689

ANALOG TO DIGITAL INTERFACE CIRCUIT

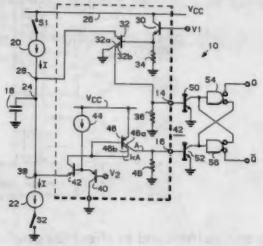
Robert B. Jarrett, Tempe, and James J. LoCascio, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 7, 1980, Ser. No. 166,864
Int. Cl.³ H03K *5/08, 5/153, 19/092*
U.S. Cl. 307—264 **13 Claims**

1. An interface circuit for providing first and second output signals in response to an applied input signal, the magnitude of which may vary above and below first and second reference voltage levels, comprising:

first circuit means having first and second inputs and an output which is responsive to the magnitude of the input signal that is supplied to said first input becoming substantially equal to the first voltage reference level that is supplied to said second input for both clamping said magnitude at the first voltage reference level to inhibit further increases in said magnitude thereof and providing the first output signal at said output;

second circuit means having first and second inputs and an



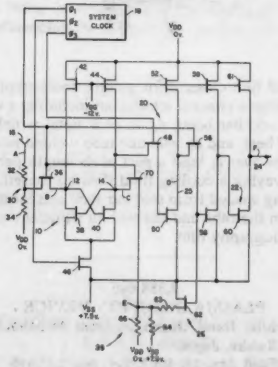
output which is responsive to the magnitude of the input signal that is supplied to said first input becoming substantially equal to the second reference level that is supplied to said second input for both clamping said magnitude at the second reference level to inhibit further decrease in said magnitude thereof and providing the second output signal at said output.

4,358,690

DIGITAL VOLTAGE COMPARATOR

Gary B. Ollendick, Mundelein, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Jul. 18, 1980, Ser. No. 170,322
Int. Cl.³ H03K *5/153, 5/24*
U.S. Cl. 307—359 **7 Claims**



1. A digital voltage comparator for comparing an input signal (A) with a reference voltage (E) comprising:

a bistable latch (10) having first and second nodes (12, 14),

first means (36) for preloading said first node (12) to a voltage level determined by the input signal (A),

second means (70) for preloading said second node (14) to voltage level (C) determined by the reference voltage (E),

third means (46) for subsequently allowing the latch (10) to race to a stable state as determined by the voltage levels (B, C) of said nodes (12, 14),

fourth means (20) for storing a signal level (D) related to the stable state of said latch (10),

fifth means (26) responsive to the signal level (D) of said fourth means (20) for providing said reference voltage (E) to said second means (70) during preloading of said latch (10) subsequent to the storing of the signal level (D) related to the stable state of said latch (10) by said fourth means (20),

sixth means (22) for providing an output signal (F) which is related to a stable state of said latch (10), said sixth means (22) provides an output signal (F) from the storage means (20) which is related to the input signal (A) to the latch (10) during a preceding time period,

a system clock (18) having a plurality of clock phases (ϕ_1, ϕ_2, ϕ_3),

said first and second means (36, 70), being controlled by a first clock phase (ϕ_1) of said system clock (18),

said third means (46) being controlled by a second clock phase (ϕ_2) of said system clock (18), and

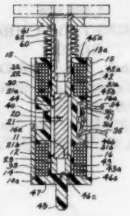
said fourth means (20) being controlled by said first and a third clock phase (ϕ_1, ϕ_3) of said system clock (18).

4,358,691

LINEAR ELECTRIC MOTOR

Robert W. Naylor, Weston, Canada, assignor to CTS Corporation, Elkhart, Ind.

Filed Aug. 8, 1979, Ser. No. 64,388
Claims priority, application Canada, Mar. 13, 1979, 323331
Int. Cl.³ H02K *41/00*
U.S. Cl. 310—12 **7 Claims**



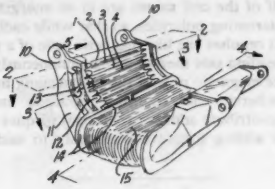
1. A linear electric motor for adjusting a metering rod of an engine carburetor to control the flow of fuel through the carburetor, wherein the motor comprises a hollow, generally cylindrical frame of magnetizable material, actuator means supported within said frame for rectilinear movement along a longitudinal axis thereof, said actuator comprising an armature including a permanent magnet and a pair of longitudinally spaced magnetic poles each with a magnetizable pole piece secured to a respective one of the poles of said magnet, a rod of non-magnetizable material secured operatively to said permanent magnet and projecting from an end of said frame for effecting movement of a metering rod, a non-magnetizable end member operatively secured to an end of said frame, a pair of stationary poles disposed respectively at opposite ends of the frame substantially surrounding said magnetic poles, electrical windings fixed relatively to the frame and each circumposing a respective magnetic pole, a non-magnetizable bearing means secured to said frame and supporting said armature for delivery of force which is at all times proportional to the amount of electrical energy communicated to said electrical windings, a stop member secured relative to said frame and adapted to arrest motion of the armature in at least one direction, and resilient means for biasing said armature relatively to said frame to an initial position.

4,358,692

STATOR ASSEMBLY FOR AN ELECTRIC MOTOR

Stig L. Hallerbäck, Västra Frölunda, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

Filed Dec. 8, 1980, Ser. No. 214,229
Claims priority, application Sweden, Jan. 29, 1980, 8000677
Int. Cl.³ H02K *1/32*
U.S. Cl. 310—42 **10 Claims**



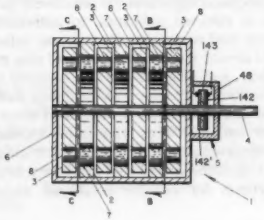
1. An electric motor comprising a stator and a rotor rotatably mounted in a rotor cavity, the stator being made from at least two stator sections and each section comprising a plurality of axially directed generally semi-cylindrical sheet metal laminations having axial edges which are directed inwardly to form the rotor cavity and having the area between said edges surrounded by a stator coil, each stator part having at its axial ends a radially directed plate member including a series of axially extending spaced plastic teeth which project and engage between the edges of the sheet metal laminations adjacent the plate member to maintain the laminations in predetermined spaced apart relation to allow passage of cooling medium through said stator coil.

4,358,693

PERMANENT MAGNET MOTOR

Denis L. Palmer, Multnomah County, Oreg.; Robert A. Palmer, Jr., and Robert A. Palmer, Sr., both of Kitsap County, Wash., assignors to Charles L. Palmer; Douglas L. Palmer; Stanley B. Palmer; Lynn L. Staker and Keith W. Cline, all of Portland, Oreg.

Filed Jun. 15, 1981, Ser. No. 273,921
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—46 **8 Claims**



1. A magnetic motor comprising:

drive shaft means defining a central axis;

a stator ring centered relative to said axis and having 4p (p=any integer) electromagnetic coil means spaced apart equally circumferentially of the ring;

a rotor coupled to said drive shaft means on one side of the stator ring and having 6p permanent magnets alternating in polarity arrangement and spaced apart equally circumferentially of the rotor such that whenever one of said coil means is aligned with one of said magnets, one-half of the coil means are aligned with one-third of the magnets;

means for supplying magnetizing current for said coil means; and

distributor means cycling said current to said coil means in such a manner that (a) each coil means has a like repeating operating cycle in which it is alternately energized and deenergized and has a polarity change each time it is energized, and (b) whenever one-third of the rotor magnets are aligned with one-half of the coil means, such one-half are in a deenergized condition and the remaining one-half of the coil means are in an energized condition with alternating polarities, so that while each coil is energized, it repulses the like magnetic pole of a rotor magnet at the leading side thereof and simultaneously attracts the opposite magnetic pole of the next trailing magnet on the rotor whereby the resulting repulsion and attraction forces contribute additive rotational torques to the rotor, thereby adding torque continuously to said drive shaft means.

4,358,694

SELECTABLY POSITIONABLE ROTARY TRANSDUCERS

Nathan Grundland, 6 Alkalai St., Rehovot, Israel

Filed Aug. 15, 1980, Ser. No. 178,615

Claims priority, application Israel, Aug. 15, 1979, 58057; Sep. 2, 1979, 58157

Int. Cl.³ H02K *24/00*; B41J *1/60*

U.S. Cl. 310—49 R **22 Claims**

1. A selectably positionable rotary transducer comprising a movable outer first member having at least one permanent magnet associated therewith and an inner stationary second member, said first member being arranged for rotational motion relative to said second member in a first plane, said second member defining an odd number of poles and a ring member joining said poles at their periphery to define a magnetic closed loop and associated apparatus for selectively providing a magnetic force of selected polarities, to individual ones of said poles to cause said first member to assume selectable positions with respect to said second member, said ring member lying in said first plane, and wherein said first member defines an inner facing circumferential surface and said ring member defines an outer facing circumferential surface, said inner and outer facing circumferential surfaces lying in electromagnetic and mechanical engagement to define an electromagnetic gap between said ring member and said first member and mechanical bearing surfaces for relative rotational mounting therebetween.

4,358,695

EDDY CURRENT COUPLING HAVING BEARING FLUX SHUNT

Daniel J. MacDonald, Brookfield, and Thomas H. Jones, Wauwatosa, both of Wis., assignors to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Nov. 3, 1980, Ser. No. 203,060

Int. Cl.³ H02K *49/00*

U.S. Cl. 310—105 **6 Claims**

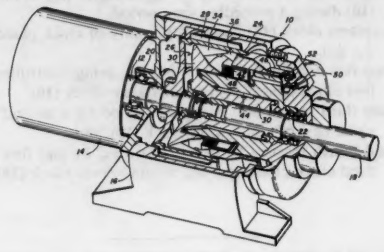
1. An eddy current coupling comprising:

coaxial rotatable input and output shaft means positioned in tandem along the axis of said shafts;

a generally tubular inductor member operatively associated with one of said input and output shaft means for rotation therewith;

a magnetic rotor member operatively associated with the other of said input and output shafts for rotation therewith and for being electromagnetically coupled to said inductor member;

a field coil mounted in said coupling for generating a magnetic flux causing electromagnetic coupling and torque



transmission between said inductor and rotor members and said input and output shaft means; and

bearing means interposed between said input and output shaft means,

one of said input and output shaft means having an axially extending recess for receiving the end of the other of said shaft means for forming a low reluctance flux path between said shaft means in parallel with said bearing means.

4,358,696

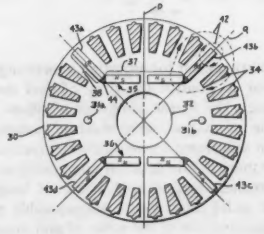
PERMANENT MAGNET SYNCHRONOUS MOTOR ROTOR

Joseph C. Liu, Little Rock, Ark.; Paul D. Wagner, Cincinnati, Ohio, and John J. Keuper, Cold Spring, Ky., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Aug. 19, 1981, Ser. No. 294,284

Int. Cl.³ H02K *21/12*

U.S. Cl. 310—156 **6 Claims**



1. A four-pole rotor for a permanent magnet synchronous motor comprising:

a plurality of magnetic laminations aligned to form a rotor body, said laminations having openings which align to define

(i) a set of rotor bar slots disposed in an arc about the periphery of the rotor body;

(ii) a central opening extending axially through said rotor body to define a shaft opening; and

(iii) first and second sets of elongae slots disposed symmetrically upon opposite sides of said rotor shaft opening, each elongate slot having a central portion extending parallel to a line tangent to said shaft opening and end portions extending generally along radii of the rotor

body and interleaved generally aligned with said rotor bar slots;

said central portions of said elongate slots lying parallel to one another and being interrupted by a magnetic bridge extending substantially in the center thereof, each of said bridges being integrally formed with said laminations; and

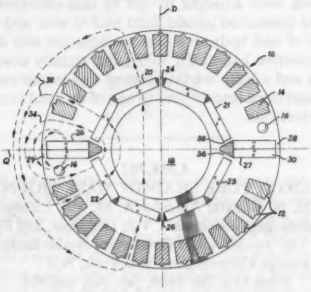
a plurality of rare earth permanent magnets disposed in said central and end portions of said elongate slots.

4,358,697

TWO-POLE PERMANENT MAGNET SYNCHRONOUS MOTOR ROTOR

Joseph C. Liu, Little Rock, Ark.; Paul D. Wagner, Cincinnati, Ohio, and John J. Keuper, Cold Spring, Ky., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Aug. 19, 1981, Ser. No. 294,362
Int. Cl.³ H02K *21/12*
U.S. Cl. 310—156 **7 Claims**



1. A two pole rotor for a permanent magnet synchronous motor comprising:

a plurality of magnetic laminations aligned to form a rotor body, said laminations having openings which align to define

(i) a set of rotor bar slots disposed about the periphery of the rotor body;

(ii) a central opening extending axially through said rotor body to define a shaft opening;

(iii) first and second pairs of magnet slots disposed symmetrically about said central opening, the slots of each pair being separated by a bridge of magnetic material formed integrally with said laminations, said bridges being 180° apart, each of said magnet slots comprising at least two straight segments disposed generally parallel to lines tangent to the periphery of said central opening, and

(iv) a third pair of magnetic slots lying along a common diametrical line displaced 90° from said magnetic bridges, each one of said third pair of slots extending radially outwardly to a point close to the periphery of said rotor body and inwardly to a point between the ends of the magnet slots of said first and second pair of slots; and

a plurality of permanent magnets disposed in said magnet slots,

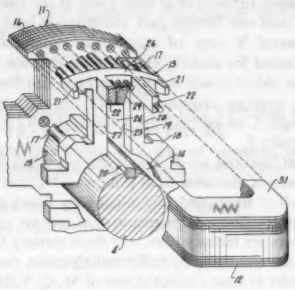
said bridges aligning with the direct axis of a motor stator when rotor is placed therein and said third pair of magnet slots is aligned with the quadature axis of said stator.

4,358,698

ROTOR CONSTRUCTION FOR DYNAMOELECTRIC MACHINES APPARATUS

Gary M. Peterson, Merrill, and Andrew J. Smiltneek, Menasha, both of Wis., assignors to Marathon Electric Corporation, Wausau, Wis.

Filed Dec. 14, 1979, Ser. No. 103,469
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—187 **4 Claims**



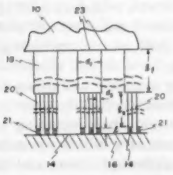
1. A salient pole rotor for a dynamoelectric machine having a plurality of circumferentially distributed rotor poles, diecast end support members integrally cast to the opposite axial ends of said rotor poles, separate electrical coils wound on said poles to form an operative pole unit, and at least one of said support members being cast extending over the axial end of each pole and extending beyond the opposite ends of the coil thereon and having spaced side arm members defining a radially extended passageway through said pole unit to cool the interior of the coil and the end of the pole, said end support members including an outer amortisseur winding portion extending circumferentially over the outer end of the pole and having said spaced side arm members integrally cast to said winding portion abutting the end of the rotor pole and defining said passageway therebetween, said coils being wound over said side arm members and defining said passageway between the interior of the coil and the end pole lamination and said two clamp side arm members, said amortisseur winding portion being spaced outwardly of the coil to form an exit opening from said passageway.

4,358,699

VERSATILE ELECTRICAL FIBER BRUSH AND METHOD OF MAKING

Doris Wilsdorf, Charlottesville, Va., assignor to The University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Jun. 5, 1980, Ser. No. 156,630
Int. Cl.³ H01R *39/24*
U.S. Cl. 310—251 **100 Claims**



1. An electrical brush for making electrical connection to at least one object, comprising:

a solid brush body formed of a matrix material having embedded therein at least one set of plural fibers;

at least one fibrous brush part, and in general M fibrous brush parts, extending from said brush body and at least partly formed of at least part of said at least one set of fibers, said fibrous brush part substantially free of matrix material and defining at least one working surface, and in general Q working surfaces, adapted for making electrical contact with at least one object, and in general Z objects, said at least one working surface formed of compositely shaped surfaces of at least some of the fibers forming said at least one fibrous part, including at least one set, and in general Y sets, of electrically conductive fiber wires adapted for making electrical connection to said at least one object at said working surface, said fiber wires having an average crossectional area A, an average exposed length l, an average diameter $d=\sqrt{4A}/\pi$, and a packing density f;

said at least one set of fiber wires extending from secondary fibers of diameter d_s in groups of N_s fiber wires per secondary fiber, and said secondary fibers extending from tertiary fibers of diameter d_t in groups of N_t secondary fibers per tertiary fiber, and these tertiary fibers extending from, and being partially embedded in, said brush body;

wherein at least a selected one of M, Q, Y, N_s, N_t, d_s/d and $d_t/d_s>1$, the remaining non-selected of M, Q, Y, N_s, N_t, d_s/d and d_t/d_s respectively being $\geqq 1$.

4,358,700

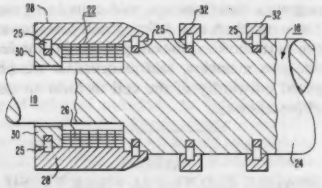
REMOVABLE SLEEVE-TO-SHAFT INTERLOCK FOR A DYNAMOELECTRIC MACHINE

Lawrence D. Nottingham, Hempfield Township, Westmoreland County, and Michael R. Jugan, Duquesne, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 13, 1980, Ser. No. 130,491

Int. Cl.³ H02K *3/50*

U.S. Cl. 310—262 **11 Claims**



1. In combination:

(A) a shaft having a groove about its outer circumferential surface;

(B) a sleeve having a central bore for receiving said shaft therethrough, said central bore having an eccentric circumferential groove about its inner surface;

(C) at least one detent, said detent being an arcuate spring having an associated radius smaller than the radius of said groove in said shaft, an associated height greater than the depth of said groove in said shaft, said detent being depressible during assembly and disassembly; and

(D) means for circumferentially positioning said detent in said groove in said shaft including at least one spacer which has a geometry which prevents said spacer from rotating circumferentially about said shaft and from interfering with the rotation of said sleeve relative to said shaft;

whereby after assembly said detent straddles the interface between said shaft and said sleeve, being within both of said grooves simultaneously, thereby preventing axial movement of said sleeve relative to said shaft.

4,358,701

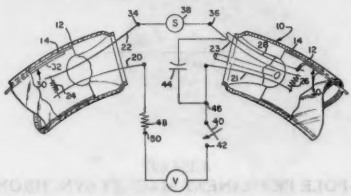
DISCHARGE LAMPS HAVING INTERNAL STARTING AID CAPACITIVELY COUPLED TO ONE OF THE ELECTRODES

William J. Roche, Merrimac, and John W. Anderson, Jr., Ipswich, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 8, 1980, Ser. No. 214,371

Int. Cl.³ H01J *17/00*

U.S. Cl. 313—197 **3 Claims**



1. A fluorescent lamp assembly comprising: a fluorescent lamp having a tubular glass body with electrodes at each end thereof, each electrode being supported by a pair of lead-in wires sealed in glass sealing means; a layer of phosphor on the interior surface of said body and an arc generating and sustaining medium therein; one of said ends being provided with a third lead-in wire adjacent to one of said electrodes; a wire starting aid connected to said third lead-in wire and extending the length of said body to a position adjacent said other electrode; a resistive ballast for said lamp serially coupling said electrodes and a lamp starting means; and means capacitively coupling said third lead-in wire to one of the lead-in wires of its adjacent electrode.

4,358,702

COLOR TUBE SHADOW MASK MOUNT

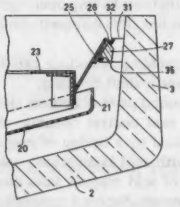
Johannes H. N. Gijrath; Albertus A. M. Van Liempd; Hendrik S. A. Versteegen; Josephus J. Van Der Geer, and Henricus J. M. Van Der Avoort, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,899

Claims priority, application Netherlands, Jul. 21, 1980, 8004174

Int. Cl.³ H01J *29/07*

U.S. Cl. 313—404 **10 Claims**



1. A colour display tube comprising an envelope having a substantially rectangular display window provided with an upright edge and a substantially rectangular colour selection electrode having a large number of apertures, which electrode is suspended in the corners of the display window by means of a strip-shaped resilient element connected to each corner of the colour selection electrode, which resilient element is substantially perpendicular to the direction of an electron beam deflected toward the respective corner of the display window, said resilient element comprising a peg at its end remote from the colour selection electrode, characterized in that the axis of the peg extends substantially parallel to the direction of the

electron beam directed toward the respective corner, said peg comprising a conical portion, and further characterized in that a supporting element is connected in the corner of the upright edge of the display window, said supporting element comprising a portion extending perpendicularly to the axis of the peg, said portion having an aperture through which the conical portion of the peg projects.

4,358,703

CATHODE-RAY TUBE

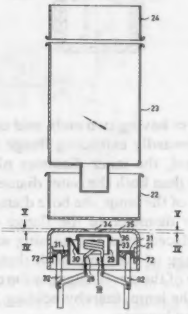
Jan Bijma, and Henricus W. M. Linssen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 956,767, Nov. 1, 1978, abandoned. This application Nov. 17, 1980, Ser. No. 207,581

Claims priority, application Netherlands, Nov. 24, 1977, 7712942

Int. Cl.³ H01J *29/56, 29/46*

U.S. Cl. 313—448 **15 Claims**



1. A cathode ray tube comprising, in an evacuated envelope, an electron gun for generating an electron beam, said electron gun including a cathode centered about an axis, a first grid positioned adjacent said cathode and spaced therefrom along said axis and a second grid spaced along said axis from said first grid, said first and second grids each having a portion extending normal to said axis and having an aperture formed therethrough at said axis, the aperture in said first grid defining a first opening on the side thereof adjacent said cathode of a shape such that a substantially axially symmetric electric lens is formed in the region between said cathode and said first grid, said aperture of said first grid further defining a second opening on the side of said first grid adjacent said second grid, said second opening being elongated in a direction normal to said axis and having a cross-sectional area larger than the cross-sectional area of said first opening, so that said first and second grids form a non-rotationally symmetric electron lens in the region therebetween.

4,358,704

HELIX TRAVELING WAVE TUBES WITH REDUCED GAIN VARIATION

Ernest A. Conquest, Mountain View, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

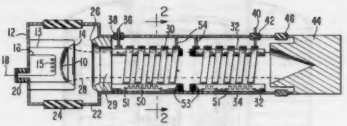
Filed Sep. 2, 1980, Ser. No. 183,541

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **24 Claims**

1. A traveling wave tube with a reduced gain variation over the passband comprising a helix-type interaction circuit, an elongated dielectric member, and a non-resonant coupled slow-wave equalizing transmission line affixed to said elongated dielectric member.

24. A method of reducing gain variation of a traveling wave tube having a helix-type interaction circuit not coupled to any resonant circuit within a same vacuum envelope, said method comprising the step of providing an elongated dielectric member adjacent said interaction circuit and one or more non-resonant coupled slow-wave equalizing transmission lines affixed to said dielectric member.



4,358,705

SUPPORTING SYSTEM FOR THE DELAY LINE OF A TRAVELLING WAVE TUBE

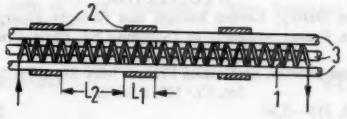
Hinrich Heynisch, Graefelfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 31, 1980, Ser. No. 202,611

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003530

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **3 Claims**



1. A supporting system for a helical or ring-bar delay line of a travelling wave tube, comprising: a delay line held by a plurality of dielectric support rods arranged parallel to one another along generating lines of the delay line; a plurality of clamping rings of resilient material being shaped and positioned to press the support rods against the delay line; and the clamping rings having a natural length L_1 in a direction along the delay line and a distance L_2 from one another such that

$$\frac{N \cdot \lambda_w}{4} = L_{1,2} \begin{cases} = L_1 \\ = L_2 \end{cases} \text{ respectively}$$

where $L_{1,2}$ designates the length of resonance sections or line resonators of the line, λ_w the wave length on the delay line, and N a whole uneven number (1,3 . . . N).

4,358,706

INSULATED COLLECTOR FOR AN ELECTRONIC POWER TUBE AND A TUBE EQUIPPED WITH SUCH A COLLECTOR

Rene Nazet, and Pierre Ribout, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 29, 1980, Ser. No. 154,273

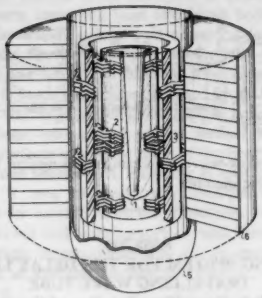
Claims priority, application France, May 31, 1979, 79 13982

Int. Cl.³ H01J *23/02*

U.S. Cl. 315—5.38 **7 Claims**

1. An insulator electron collector assembly for electronic tubes, comprising two metal parts concentrically disposed along an axis, forming respectively an inner collector and an outer sleeve and further comprising a third part made of insulating material located therebetween, a first series of resilient members located between said inner collector and said third part, a second series of resilient members located between said third part and said outer sleeve, said resilient members consist

of elements stacked in the direction of said axis, and which elements comprise on both sides interdigitated projecting parts



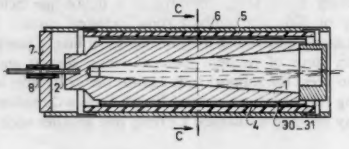
distributed on the periphery of the elements by which they rest against the parts between which they are located.

4,358,707

INSULATED COLLECTOR ASSEMBLY FOR POWER ELECTRONIC TUBES AND A TUBE COMPRISING SUCH A COLLECTOR

Bernard Delory; Gérard Euloge, and Georges Fleury, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 29, 1980, Ser. No. 154,274
Claims priority, application France, May 31, 1979, 79 13983
Int. Cl.³ H01J *23/02*
U.S. Cl. 315—5.38 **3 Claims**



1. An insulated electron collector assembly for high-power electronic tubes of the type comprising an outer insulating sleeve, an inner collector, and a resilient assembly means therebetween, wherein said resilient assembly means consist of a series of flexible metal pieces in the form of teeth distributed on the outer surface of the collector, along rows parallel to the collector axis, said teeth being obliquely directed with regard to the collector axis and to the cross sectional planes perpendicular to said axis and being divided with respect to a cross sectional plane of said collector in two groups, each group having different inclinations.

4,358,708

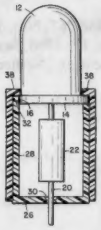
LIGHT EMITTING DIODE ASSEMBLY

Joseph A. Silva, Brooklyn, and Paul Manchenko, New Hyde Park, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Apr. 15, 1980, Ser. No. 140,637
Int. Cl.³ H01J *7/44, 13/46, 19/78, 29/96*
U.S. Cl. 315—58 **13 Claims**

1. A lamp assembly, of the type comprising a lamp in a package, said lamp having a cylindrical light-emitting portion with a base, said base comprising an outwardly extending flange, said flange having a flat portion, said lamp having at least one electrically conducting lead extending from the base in a direction away from the light-emitting portion, characterised in that said package comprises:

a cylindrical housing having a base and a side wall, said base having an opening for the insertion of the conducting lead, the inner diameter of the housing being smaller than the outer diameter of the flange of the lamp so that the flange cannot be inserted into the housing, a portion of the side wall of the housing being provided with a flat key, said lamp being placed on the side wall of the housing with the lead passing through the opening in the base and the flat key engaging the flat portion of the flange; and



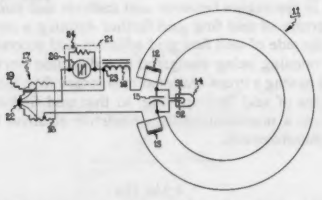
a cylindrical cover having two ends, said cover having a side wall and an inwardly extending flange forming a bore at one end thereof, the inner diameter of the cover being slightly larger than both the outer diameter of the housing and the flange of the lamp, the bore diameter being smaller than the outer diameter of the flange of the lamp, said cover being placed over the housing and the outwardly extending flange of the lamp such that the inwardly extending flange of the cover engages the outwardly extending flange of the lamp, thereby holding the lamp onto the side wall of the housing.

4,358,709

FLUORESCENT LIGHT UNIT WITH DUAL LIGHT LEVELS

Donald E. Magai, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,043
Int. Cl.³ H05B *41/18*
U.S. Cl. 315—99 **6 Claims**



1. A multiple light level gas discharge light unit, such as a fluorescent light unit, for operation from a-c electrical power, comprising a gas discharge light bulb having a pair of cathodes therein, a three-terminal base, means connecting a first end of one of said cathodes to a first terminal of said base, a ballast reactor connected between a first end of the other of said cathodes and a second terminal of said base and adapted to ballast said light bulb at a relatively high light level, and ballast circuit means connected between said second terminal and a third terminal of said base and adapted to ballast said light bulb at a relatively low light level in cooperation with said ballast reactor, said ballast circuit means comprising an impedance connected between said second and third base terminals, and bilateral switch means connected in parallel with said impe-

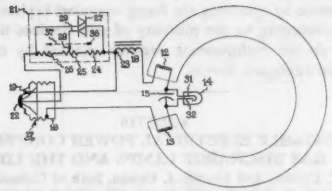
dance, and said light unit including a starter switch connected between the remaining ends of said cathodes and adapted to close for a period of time when electrical power is applied to said base, in order to cause preheat current to flow through said cathodes, and thereafter be in open condition when said light bulb is operating, said bilateral switch means being adapted to be conductive during at least a portion of each electrical power half-cycle during said preheating of the filaments for said relatively low light level operation and thereafter being non-conductive during low light level operation of the lamp.

4,358,710

FLUORESCENT LIGHT UNIT WITH DIMMABLE LIGHT LEVEL

Donald E. Magai, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,020
Int. Cl.³ H05B *41/18*
U.S. Cl. 315—101 **6 Claims**



1. A multiple light level gas discharge light unit, such as a fluorescent light unit, for operation from a-c electrical power, comprising a gas discharge light bulb having a pair of cathodes therein, a three-terminal base, means connecting a first end of one of said cathodes to a first terminal of said base, a ballast reactor connected between a first end of the other of said cathodes and a second terminal of said base and adapted to ballast said light bulb at a relatively high light level, and ballast circuit means connected between said second terminal and a third terminal of said base and adapted to ballast said light bulb at a relatively low light level in cooperation with said ballast reactor, said ballast circuit means comprising an impedance connected between said second and third base terminals, and bilateral switch means connected in parallel with said impedance, and said light unit including a starter switch connected between the remaining ends of said cathodes and adapted to close for a period of time when electrical power is applied to said base, in order to cause preheat current to flow through said cathodes, and thereafter be in open condition when said light bulb is operating, said bilateral switch means being adapted to be conductive during at least a portion of each electrical power half-cycle during said preheating of the cathodes for said relatively low light level operation, and control means connected to control the conduction phase angle of said bilateral switch means to vary the light level of said relatively low light level operation.

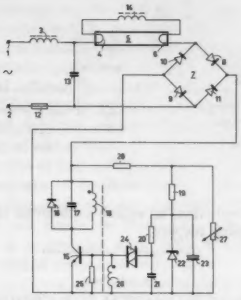
4,358,711

CIRCUIT ARRANGEMENT FOR STARTING AND OPERATING A GAS- AND/OR VAPOR DISCHARGE LAMP

Hans Bex, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1980, Ser. No. 146,551
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924069
Int. Cl.³ H05B *41/36*
U.S. Cl. 315—208 **9 Claims**

1. A circuit arrangement for starting and operating an electric discharge lamp including preheatable electrodes having free ends that are—at least during starting of the lamp—electrically interconnected, means connecting the lamp in series-connection with an electric ballast

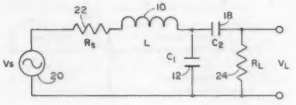


4,358,712

DISCHARGE LAMP BALLAST

Ludovic S. Filgas, Jr., Berkeley, and Haakon T. Magnussen, Jr., Pinole, both of Calif., assignors to Altex Scientific, Inc., Berkeley, Calif.

Filed Dec. 29, 1980, Ser. No. 221,095
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—243 **4 Claims**



1. Apparatus for starting and operating a gas discharge lamp comprising:

power supply means for supplying an alternating voltage across two power supply terminals;

a series-resonant circuit, connected across the two power supply terminals, comprising an inductor and a first capacitor connected in series; and

a lamp circuit, connected in parallel with the first capacitor, comprising a second capacitor connected in series with a gas discharge lamp, the second capacitor having a substantially smaller capacitance than the first capacitor.

4,358,713

BRIGHTNESS CONTROL DEVICE FOR LIGHT EMITTING DISPLAY OF ELECTRONIC METER

Tetsuo Senoo, Inagi, and Kouichi Kogawa, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

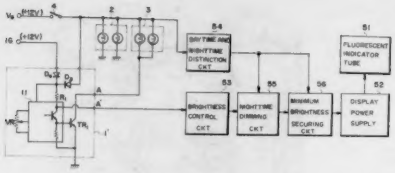
Filed Sep. 25, 1980, Ser. No. 190,831
Claims priority, application Japan, Sep. 25, 1979, 54-121969
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—291 **15 Claims**

1. A brightness control device for a light emitting display of an electronic meter for use with an illumination controller which generates a pulse signal having a variable duty factor and which is connectable to an illumination lamp when a lighting switch is turned on,

said brightness control device comprising:

(a) a brightness control circuit for generating a control pulse volage to be applied to the light emitting display in response to the pulse signal to control the brightness of the light emitting display in response to the duty factor of the pulse signal; and

(b) a minimum brightness securing circuit for reducing the amplitude of said control pulse voltage when the lighting



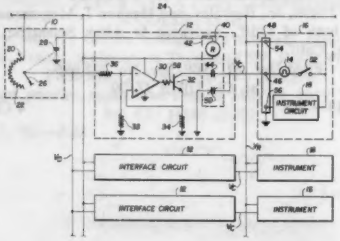
switch is turned off to secure a minimum brightness of the light emitting display.

4,358,714

LIGHT DIMMING SYSTEM FOR GROUNDED-SIDE CONTROL OF DISCRETE INDICATOR LAMPS

Clark W. Sechler, Cherry Hill, N.J., and Archie T. Sherbert, Jr., Media, Pa., assignors to Boeing Vertol Company

Filed Dec. 5, 1980, Ser. No. 213,713
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—291 **8 Claims**



1. Light dimming apparatus, which comprises:
voltage supply means for supplying a substantially constant supply voltage relative to ground;
dimmer control means, connected to receive the supply voltage, for producing an arbitrarily variable control voltage relative to ground; and
at least one light circuit which includes
a two terminal, electrically-actuated, light emitter having one terminal connected to receive the supply voltage, and
interface circuit, having an input terminal connected to receive the supply voltage, a control terminal connected to receive the control voltage, and an output terminal connected to the other terminal of the light emitter, for producing at its output terminal an output voltage relative to ground which is proportional to the difference of the supply voltage and the control voltage, whereby the voltage across the ligh emitter is proportional to the control voltage.

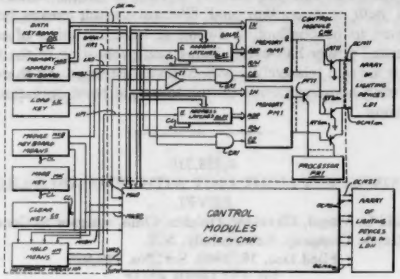
4,358,715

KEYBOARD OPERATED CONTROLLER

Frank Dinges, 176 W. 87th St., New York, N.Y. 10024, and Robert L. Tartaglio, c/o Design Circuit Inc., 141 5th Ave., New York, N.Y. 10010

Division of Ser. No. 925,039, Jul. 17, 1978, Pat. No. 4,240,011. This application Jul. 14, 1980, Ser. No. 168,609
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—292 **3 Claims**

1. A method of controlling a plurality of electrically powered devices comprising the steps of storing, in a set of addressed multiposition registers, control signals for controlling the states of said devices wherein each position of a register is associated with one of said devices, arranging for the selection of one of the registers through the use of a finger-operated keyboard device and by the use of capacitance disturbance therein, selecting one of the addressed multiposition registers



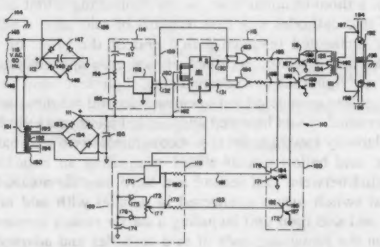
by generating an address by means of creating a capacitance disturbance by operating the finger-operated keyboard device, and transmitting to the plurality of said devices the control signals in the multiposition register selected by the finger-operated keyboard device.

4,358,716

ADJUSTABLE ELECTRICAL POWER CONTROL FOR GAS DISCHARGE LAMPS AND THE LIKE

Jack C. Cordes, and Dennis J. Denen, both of Columbus, Ohio, assignors to White Castle System, Inc., Columbus, Ohio

Filed Apr. 14, 1980, Ser. No. 139,846
Int. Cl.³ G05F *1/00*; H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—306 **9 Claims**



1. Adjustable electrical power control apparatus for supplying variable power to a load comprising:
(a) first direct current input means;
(b) second direct current input means;
(c) signal control means electrically connected to the first direct current input means and including high frequency pulse generating means for producing high frequency pulses within the range of 5,000 to 250,000 pulses per second;
(d) burst control means electrically connected to said first direct current input means and to said signal control means and including an adjustable pulse generator for producing variable duty cycle pulses, said burst control means being operable to intermittently interrupt the high frequency pulses produced by said high frequency pulse generating means;
(e) semiconductor switch means electrically connected to receive the intermittently interrupted high frequency pulses produced by said signal control means and said burst control means, said semiconductor switch means being conductive in response to each pulse received and nonconductive between pulses; and

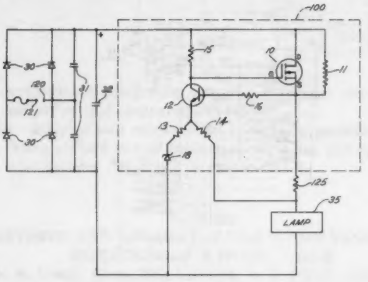
(f) load-matching inductive means electrically connected to receive current from said second direct current input means and responsive to said semiconductor switch means for providing an alternating path of conduction for current from said second direct current input means to a load.

4,358,717

DIRECT CURRENT POWER SOURCE FOR AN ELECTRIC DISCHARGE LAMP

William J. Elliott, Zephyr Cove, Nev., assignor to Quietlite International, Ltd., Reno, Nev.

Filed Jun. 16, 1980, Ser. No. 159,665
Int. Cl.³ H05B *41/36*
U.S. Cl. 315—308 **32 Claims**



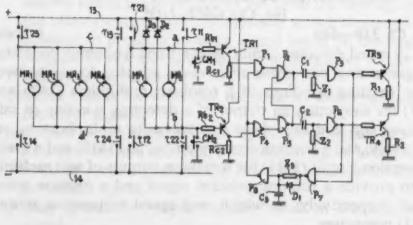
1. A power supply for an electric discharge vapor lamp comprising, in combination,
a source of a direct current potential,
a ballast resistor,
a VMOS insulated-gate field effect transistor having a gate electrode and a source-drain channel,
first circuit means for serially connecting said channel and said vapor lamp across said source,
second circuit means for connecting said ballast resistor in parallel with said channel,
and regulating means responsive to variations in the magnitude of electrical energy delivered to said lamp for varying the potential applied to said gate electrode to control the conductivity of said channel.

4,358,718

CENTRALIZED ELECTRIC CONTROL DEVICE IN PARTICULAR FOR AUTOMOBILE VEHICLE LATCHES

Gerard Delomez, Evry, France, assignor to Compagnie Industrielle de Mecanismes en abrege C.I.M., Levallois Perret, France

Filed Jun. 26, 1980, Ser. No. 163,109
Claims priority, application France, Jul. 3, 1979, 79 17225
Int. Cl.³ H02P *1/54*
U.S. Cl. 318—54 **14 Claims**



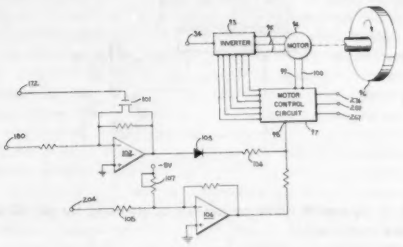
1. An electric control device for controlling a group of at least two reversible motor-driven actuating devices, in particular for automobile vehicle latches, in which each actuating device may be operated, selectively by its motor supplied with dc current from a supply source and mechanically, in opposite directions between two positions and is the region of electromotive forces having opposite polarities when it is operated mechanically respectively in one direction and in the other, said control device comprising, connected in a general circuit, a detection circuit having two inputs respectively connected to the terminals of at least one of said motors and two outputs which respectively deliver signals representing the detected presence and the respective polarity of an electromotive force at said terminals of said at least one motor, a first power circuit connected to a first of said outputs of the detection circuit and operative, in response to the detection by the detection circuit of an electromotive force of a given polarity at said terminals of said at least one motor, to connect all the motors to said supply source in accordance with said given polarity, and a second power circuit connected to a second of said outputs of the detection circuit and operative, in response to the detection by the detection circuit of an electromotive force of opposite polarity to said given polarity at said terminals of said at least one motor, to connect all said motors to said supply source in accordance with said opposite polarity.

4,358,719

PEAK POWER LIMITER SYSTEM FOR EXCAVATOR

Richard G. Currier, West Allis, and Donald M. Mains, Greendale, both of Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Jul. 18, 1980, Ser. No. 170,183
Int. Cl.³ H02K *7/02*
U.S. Cl. 318—161 **4 Claims**



4. In a drive system for a mining machine having a hoist motor, a crowd motor and a swing motor, the combination comprising:
a rectifier circuit having inputs connected through lines to a source of a.c. power and an output terminal at which d.c. power is produced;
a d.c. bus connected to said rectifier output terminal;
a set of inverters, each having an input connected to said d.c. bus, each having an output connected to one of said motors and each being operable in response to signals from an associated inverter control circuit to deliver power to its attached motor from said d.c. bus and to regenerate power to said d.c. bus from its attached motor; and
a peak power limiter system which includes:
(a) a flywheel mounted to the mining machine,
(b) A flywheel motor coupled to rotate the flywheel when electrical power is supplied to the flywheel motor and to regenerate electrical power when the flywheel rotates the flywheel motor,
(c) a flywheel inverter having an input connected to said d.c. bus and an output connected to the flywheel motor, the flywheel inverter being responsive to signals from an associated flywheel inverter control circuit to deliver electrical power to the flywheel motor from said

d.c. bus and to regenerate power to said d.c. bus from the flywheel motor, and

(d) power sensing means for generating a power signal to said flywheel inverter control circuit which is indicative of the total electrical power being delivered to the mining machine by said a.c. power source,

wherein the flywheel inverter control circuit operates the flywheel inverter and flywheel motor to deliver power to the flywheel when the total electrical power supplied to the mining machine drops below a preselected level and to deliver power to the d.c. bus from the flywheel when the total electrical power supplied to the mining machine exceeds a preselected level.

4,358,720

DC MOTOR DRIVING CIRCUIT

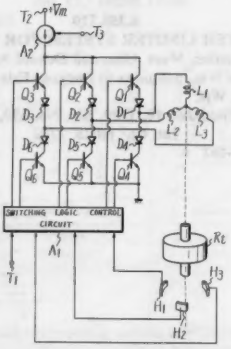
Fumiyoshi Abe, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1981, Ser. No. 235,655

Claims priority, application Japan, Feb. 25, 1980, 55/22606; Feb. 26, 1980, 55/23245

Int. Cl.³ H02K *29/02*

U.S. Cl. 318—254 **11 Claims**



1. A dc motor drive circuit for controlling torque of a dc motor comprising:

a power supply terminal;

a reference voltage terminal; a plurality of switching circuits,

a plurality of windings for said motor interconnected by said switching circuits between said power supply terminal and said reference voltage terminal for supplying driving power to said windings; and

a variable constant current circuit connected in circuit with said motor windings and said first power supply terminal and said reference voltage terminal and said variable constant current circuit controlling the torque of said dc motor in response to a control signal supplied to said variable constant current circuit.

4,358,721

BRIDGE POSITIONING DEVICE

Aaron V. Farr, Logan, Utah, assignor to Abex Corporation, New York, N.Y.

Filed May 20, 1980, Ser. No. 151,559

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—604 **3 Claims**

1. A control for the motor of a mechanism which adjusts the position of the distal end of a passenger loading bridge comprising:

means for producing a first analog signal which indicates a preset position of the distal end of the bridge;

means for producing a second analog signal which indicates the actual position of the distal end of the bridge;

analog means for comparing said first and second analog signals; and

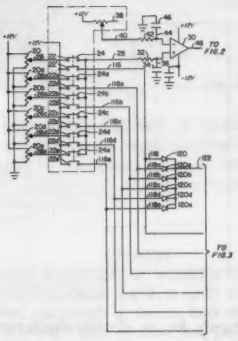
actuating means for connecting the first signal producing means with the comparator means;

said comparing means producing a third signal which indicates the direction the motor must run so that the adjustment mechanism will move the end of the bridge from the actual position to the preset position; characterized by:

means for receiving and latching the data from the third signal;

one relay which operates the motor in one direction;

another relay which operates the motor in another direction;



said receiving and latching means providing a fourth signal which actuates said one or another relay to cause the motor to operate in said one or another direction whereby the adjustment mechanism moves the end of said bridge;

said comparing means producing a fifth signal which indicates the bridge end is at the preset position;

means for sensing said fifth signal and de-energizing said one or another relays to thereby stop operation of the motor;

means for indicating when the bridge end is at the preset position; and

means for interrupting power to said indicating means when said actuating means is actuated to move the end of the bridge from the preset position.

4,358,722

SPEED DETECTOR USING RESOLVER

Takanobu Iwakane; Tohru Kai; Kenji Hirose, and Koichiro Nakagawa, all of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Tokyo, Japan

Division of Ser. No. 933,914, Aug. 15, 1978, Pat. No. 4,259,628. This application Jun. 27, 1980, Ser. No. 163,415

Claims priority, application Japan, Aug. 17, 1977, 52-98991; Aug. 17, 1977, 52-98992; Nov. 14, 1977, 52-153626; Nov. 17, 1977, 52-153998; Mar. 3, 1978, 53-24730

Int. Cl.³ G05B *1/06*

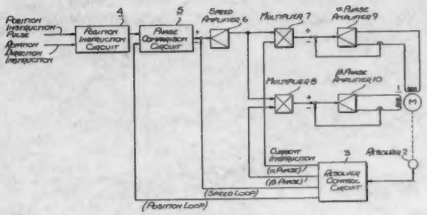
U.S. Cl. 318—661 **1 Claim**

1. A speed detector comprising: a fixed frequency oscillator for generating two-phase sine waves adapted to excite two-phase exciting windings of a resolver; multipliers (**1406** and **1407**) for subjecting an output of a detecting winding of said resolver and said two-phase sine waves to multiplication, respectively; and a position conversion circuit (**1410**) and a speed conversion circuit (**1411**) for receiving outputs of said multipliers to provide a rotation position signal and a rotation speed signal, respectively; in which said speed conversion circuit (**1411**) comprises:

a multiplier (**1413**) for subjecting to multiplication a signal from said multiplier (**1406**) and a signal from a variable frequency oscillator (**1412**);

a multiplier (1414) for subjecting to multiplication a signal from said multiplier (1407) and a signal from said variable frequency oscillator (1412);

a comparator (1415) for subtracting an output of said multiplier (1414) from an output of said multiplier (1413); and



a proportional integration amplifier (1416) for receiving an output of said comparator (1415),

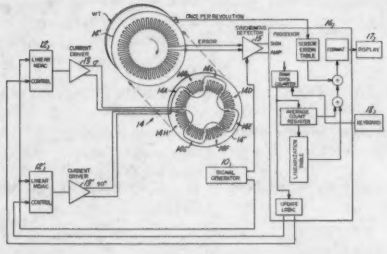
the output of said proportional integration amplifier (1416) being utilized as said rotation speed signal and applied to said variable frequency oscillator (1412).

4,358,723

METHOD AND APPARATUS FOR MEASURING THE ROTATION OF A WORK TABLE

Jule A. Scholl, Clove Rd., Verbank, N.Y. 12585, and Paul F. Fitts, Smithfield Rd., Millerton, N.Y. 12546

Filed Aug. 29, 1980, Ser. No. 182,764
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—661 **20 Claims**



1. Apparatus for measuring the rotation of a member, comprising:

an angular error sensor means including a movable sensor element and at least one pair of elements forming at least one stationary arrangement, said stationary elements having a quadrature spaced relation to each other, said movable element being connected to said member for rotation therewith, said stationary quadrature elements being adapted to receive a first signal for one element and a second signal phase-shifted by 90° from the first signal for the other element, and said movable sensor element being adapted to produce an error signal based on the angular position of the movable element with respect to the stationary arrangement;

detector means for detecting the polarity and amplitude of the error signals;

processor means for accumulating the error signals in a raw data counter and applying a correction signal to the accumulated error signals in the raw data counter to form a linearized signal;

display means for displaying the value of the corrected signal;

signal generator means for creating an alternating current signal; and

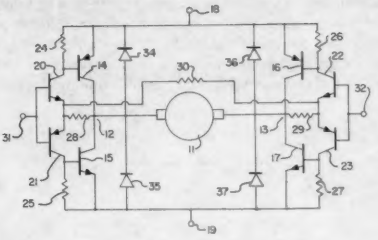
means for attenuating the alternating current to generate both the first and second reference signals, said means for attenuating being controlled by the value of the contents of the raw data counter of said processor means such that the error signal from the sensor means is driven toward zero.

4,358,724

SOLID STATE SERVO AMPLIFIER FOR A D.C. MOTOR POSITION CONTROL SYSTEM

Lambert Haner, Rocky River, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Dec. 8, 1980, Ser. No. 213,748
Int. Cl.³ G05F *1/08*
U.S. Cl. 318—681 **3 Claims**



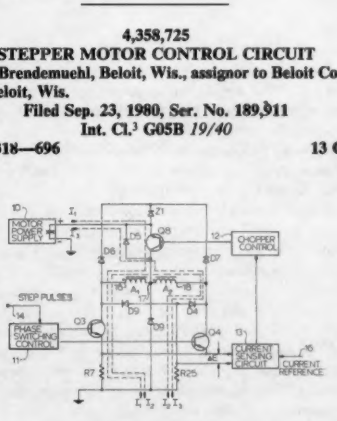
1. A servo motor amplifier comprising an output bridge of complementary output transistors driven respectively by a bridge of complementary driver transistors each connected to a separate collector resistor, the other ends of each of those collector resistors being connected to the emitter of its associated output transistor, the diagonal of the output bridge between collectors of each pair of complementary output transistors constituting the bridge output, a separate connection between the base of each output transistor and the collector of its associated driver transistor, a load resistor connected across the diagonal of the driver bridge between the junction of the emitters of each pair of complementary driver transistors, a separate feedback resistor connected between the junction of the emitters of each pair of complementary driver transistors and the junction of the collectors of their associated output transistors, means for connecting a direct current power supply across the other diagonal of the output bridge, and means for connecting an input between the connected bases of each pair of complementary driver transistors.

4,358,725

STEPPER MOTOR CONTROL CIRCUIT

Roger C. Brendemuehl, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Sep. 23, 1980, Ser. No. 189,911
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **13 Claims**



1. A stepper motor control circuit for a stepper motor hav-

ing at least a single phase comprising a pair of windings magnetically coupled together and joined together at first ends thereof, a direct current motor power supply with one terminal connected to a reference potential, a first electronic switch connected between the other terminal of said motor power supply and said first ends of said pair of windings, a chopper control connected to said first electronic switch to control it, a first resistor with one side connected to said reference potential, a second electronic switch connected between the second end of one of said pair of windings and the second side of said first resistor, a third electronic switch connected between said second end of said first resistor and the second end of the second of said pair of windings, a phase switching control receiving input step pulses connected to said second and third electronic switches to turn them on and off and a sensing circuit connected to said second electronic switch and said first resistor so as to sense the voltage drop across said first resistor and supplying an output to said chopper control, a second resistor connected between said reference potential and the second end of the second of said pair of windings.

4,358,726

CURRENT TYPE INVERTER

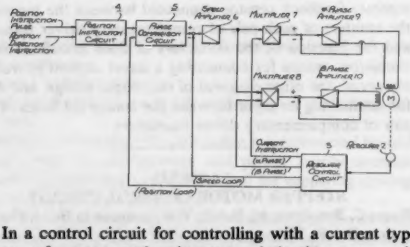
Takanobu Iwakane; Tohru Kai; Kenji Hirose, and Koichiro Nakagawa, all of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Tokyo, Japan

Division of Ser. No. 933,914, Aug. 15, 1978, Pat. No. 4,259,628. This application Jun. 27, 1980, Ser. No. 163,414

Claims priority, application Japan, Aug. 17, 1977, 52-98991; Aug. 17, 1977, 52-98992; Nov. 14, 1977, 52-153626; Nov. 17, 1977, 52-155998; Mar. 3, 1978, 53-24730

Int. Cl.³ G05B *1/01*; H02P *5/40*

U.S. Cl. 318—798 **1 Claim**



1. In a control circuit for controlling with a current type inverter a frequency to be given to an induction motor; said current type inverter comprises:

a two-phase sine wave generator which receives a rotation speed signal θ of said induction motor (2107) and a torque instruction signal i_2 obtained from a speed deviation signal, and in which said rotation speed signal θ is added to a slip frequency correspondent obtained through calculation from said torque instruction signal i_2 to provide a revolving magnetic field angular speed ψ, from which signals $im\alpha$ and $im\beta$ corresponding to two-phase sine waves cos ψ and sin ψ; and

a vector calculating circuit which receives outputs of said two-phase sine wave generator and said torque instruction signal i_2 and calculates primary current components $i_{1\alpha}$ and $i_{1\beta}$ from an exciting current vector component and a secondary current vector component,

the outputs of said vector calculating circuit being utilized as frequency instruction.

4,358,727

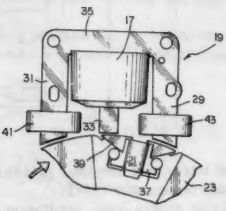
ECONOMICAL FLYWHEEL ALTERNATOR FOR TRICKLE CHARGING A SMALL LAWNMOWER BATTERY

Kenneth W. Campen, Kiel, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Sep. 25, 1980, Ser. No. 190,897

Int. Cl.³ H02K *7/02, 21/22*; H02P *9/00*

U.S. Cl. 322—90 **2 Claims**



1. In an internal combustion engine powered device having a storage battery, battery energizable engine starter, and an engine ignition system including a three legged E-shaped laminated startor core and a single flywheel supported permanent magnet, an arrangement for charging the storage battery during engine operation comprising a first charging coil on one of the outer "E" legs, a second charging coil on the other of the outer "E" legs, a first diode connected in series with the first charging coil, a second diode connected in series with the second charging coil, and means connecting the two coil-diode series circuits in parallel with one another to the battery to provide a pair of sequential charging current pulses to the battery during each revolution of the flywheel.

4,358,728

VOLTAGE CONTROL CIRCUIT RESPONSIVE TO FET PROPAGATION TIME

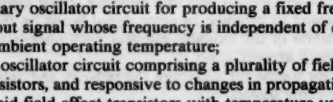
Yukio Hashimoto, Tokorozawa, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Mar. 13, 1980, Ser. No. 129,829

Claims priority, application Japan, Apr. 10, 1979, 54-43164

Int. Cl.³ G05F *1/58*

U.S. Cl. 323—275 **13 Claims**



13. A voltage control circuit for producing a controlled supply voltage, comprising:

a supply voltage source;

a primary oscillator circuit for producing a fixed frequency output signal whose frequency is independent of changes in ambient operating temperature;

a ring oscillator circuit comprising a plurality of field effect transistors, and responsive to changes in propagation time of said field effect transistors with temperature variations for producing an output signal whose frequency varies with respect to ambient operating temperature;

comparator circuit means for comparing the periods of oscillation of said primary oscillator circuit and said ring oscillator circuit for thereby producing output signals indicative of changes in the period of oscillation of said ring oscillator circuit resulting from changes in ambient operating temperature;

a charge pump circuit composed of a capacitor and circuit

means responsive to said output signals from said ring oscillator circuit for selectively increasing and decreasing a charge on said capacitor; and

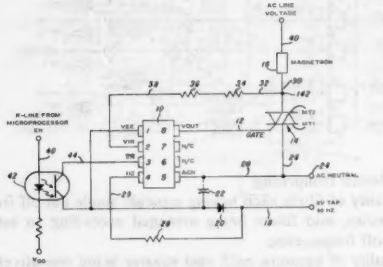
a voltage regulating transistor responsive to a voltage developed across said capacitor for regulating said supply voltage from said supply voltage source to produce said controlled supply voltage; said controlled supply voltage being applied to said field effect transistors of said ring oscillator circuit for thereby compensating said changes in propagation time thereof.

4,358,729

THYRISTOR DRIVER CONTROLLER FOR REACTIVE LOADS AND METHOD OF OPERATION THEREOF

Patrick J. Hart, Johnson City, Tenn., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 4, 1980, Ser. No. 175,169
Int. Cl.³ H02J *1/00*
U.S. Cl. 323—322 **10 Claims**



1. A circuit for minimizing the surge currents in an AC load current produced by an AC voltage applied to a reactive load comprising:

a thyristor coupled to said load which may be switched into a conductive and non-conductive state,

peak fire circuit means coupled to said AC voltage which generates a series of trigger pulses synchronized with the AC voltage and generates a peak fire enable signal that corresponds to the first peak of the AC line voltage, and

zero fire circuit means coupled to said thyristor and said peak fire circuit for sensing the change in voltage and current of said thyristor such that when a voltage of a predetermined magnitude across said thyristor appears and said peak fire enable signal is present, trigger pulses turn on the thyristor initially at the first peak of the AC line voltage and thereafter turns on the thyristor when the AC current therethrough approaches zero,

said peak fire circuit means comprising

a frequency-locked loop oscillator for producing a series of trigger pulses synchronized with the AC line voltage, and

decoder means coupled to said frequency-locked loop oscillator for producing a zero fire enabling gating signal at the peak of said AC line voltage, and

said frequency-locked loop oscillator comprising an up/down counter coupled to signals representative of the frequency of said AC line voltage and said trigger pulses for determining which of said signals occurs first and generating at least one digital signal indicating whether said trigger pulse frequency should be increased or decreased,

digital-to-analog converter means coupled to said digital signals for generating increasing or decreasing analog control voltage steps related to the increasing or decreasing digital signal steps,

a variable frequency control oscillator coupled to said converter for adjusting the trigger pulses upward or downward in order to obtain synchronization between said AC line voltage and said trigger pulses, and

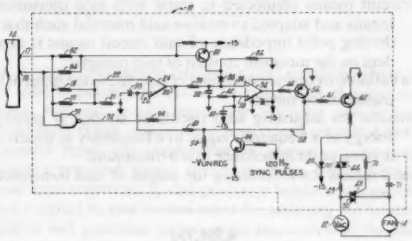
a counter coupled between said oscillator and said up/down counter for dividing down said trigger pulses.

4,358,730

AC POWER CONTROL CIRCUIT

Brian L. Beifus, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Jun. 19, 1981, Ser. No. 275,557
Int. Cl.³ G05B *24/02*
U.S. Cl. 323—322 **12 Claims**



1. A control circuit for accurately regulating the power to a load which is selectively connected to a power supply of unregulated AC line voltage by a signal responsive conduction-control switch, said control circuit comprising:

means for supplying a first DC signal representative of at least one desired load power level;

means for supplying a second signal comprising a DC level with a periodic ripple, said DC level representing a reference load power level and an automatically adjustable component proportional to the voltage level of said unregulated AC line voltage;

first comparing means having inputs of and being responsive to said first and said second signals for providing a third signal having a square waveform the duty factor of which is a function of said desired power level relative to said reference load power level and compensating for said unregulated AC line voltage level;

means responsive to said third signal for providing a fourth signal having a DC component which is a function of said third signal duty factor;

means for supplying a fifth signal comprising a periodic sawtooth of constant DC level having a repetition rate which is a multiple of submultiple of the frequency of said AC supply;

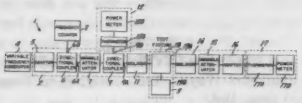
second comparing means having inputs of and being responsive to said fourth and said fifth signals for providing a sixth signal, said sixth signal being a square waveform varying between two states at the repetition rate of said fifth signal and the duty factor of which is determined by the DC component of said fourth signal such that the timing of transition to and the duration in a particular one of said states thereof is a function of said desired power level relative to said reference load power level and compensated for said unregulated AC line voltage level; and

means for operatively extending said sixth signal to said conduction switch in a manner to control the conduction timing of said switch at least as a function of the timing of transition to and the duration of said particular one state of said sixth signal.

4,358,731
APPARATUS AND METHOD FOR MOISTURE MEASUREMENT

Donald H. Steinbrecher, Woburn, Mass., assignor to Philip Morris Incorporated, New York, N.Y.

Filed May 23, 1980, Ser. No. 152,597
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—58.5 R **13 Claims**



1. Apparatus for use in determining the moisture content of a material comprising:

transmission means;

circuit means connected in shunt with said transmission means and adapted to receive said material such that the driving point impedance of said circuit means is dependent on the moisture content of said material;

a variable frequency oscillator connected to the input of said transmission means;

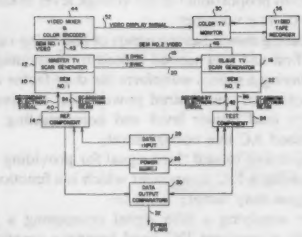
means for adjusting said oscillator so that it generates energy at a frequency equal to a frequency at which said driving point impedance is at a minimum;

and means for monitoring the output of said transmission means.

4,358,732
SYNCHRONIZED VOLTAGE CONTRAST DISPLAY ANALYSIS SYSTEM

Merrill F. Johnston, Marina Del Rey; Alex Shumka, La Canada; Emmett Miller, Long Beach, and Kenneth C. Evans, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 38,550, May 14, 1979. This application Aug. 22, 1980, Ser. No. 180,230
Int. Cl.³ G01R *15/12*
U.S. Cl. 324—73 R **22 Claims**



1. An apparatus for comparing internal voltage potentials of first and second electronic components operating simultaneously in response to the same stimuli comprising,

a first scanning electron microscope having a first output video signal related to voltage potentials within said first electronic component,

means for generating a predetermined scan pattern,

first means for scanning said first electronic component in accordance with said predetermined scan pattern,

a second scanning electron microscope having a second output video signal related to voltage potentials within said second electronic component,

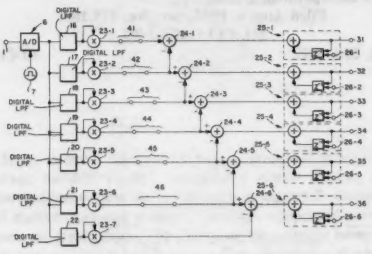
second means responsive to said first means for simultaneously scanning said second electronic component in accordance with said predetermined scan pattern as said first electronic component is scanned, and

means responsive to said first and second video signals for displaying a single video signal indicative of a predetermined voltage differential of said predetermined scan pattern.

4,358,733
SPECTRUM ANALYZER WITHOUT DISTINCT BAND-PASS FILTER COMPONENTS

Keishi Hanahara, Yamato, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 22, 1980, Ser. No. 199,648
Claims priority, application Japan, Oct. 23, 1979, 54-136890
Int. Cl.³ G01R *23/16*
U.S. Cl. 324—77 E **8 Claims**



1. A device comprising:

a plurality of filters each having separate single cut-off frequencies, said filters being arranged according to said cut-off frequencies;

a plurality of squarers, each said squarer being operatively connected to a corresponding one of said filters;

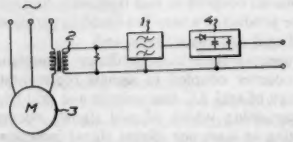
a plurality of subtraction circuits, each subtraction circuit having an output and having positive and negative inputs respectively, operatively connected to two corresponding adjacent ones of said squarers; and

a plurality of accumulators, each of said plurality of accumulators being operatively connected to said output of a respective one of said subtraction circuits.

4,358,734
METHODS AND APPARATUSES FOR DETECTING THE SPEED OF AN ASYNCHRONOUS MOTOR

Bo A. Elfner, and Anders P. P. Comstedt, both of Löddeköpinge, Sweden, assignors to EL-FI Innovationer AB, Helsingborg, Sweden

Filed Mar. 24, 1981, Ser. No. 246,946
Claims priority, application Sweden, Mar. 26, 1980, 8002310
Int. Cl.³ G01P *3/56*
U.S. Cl. 324—161 **9 Claims**

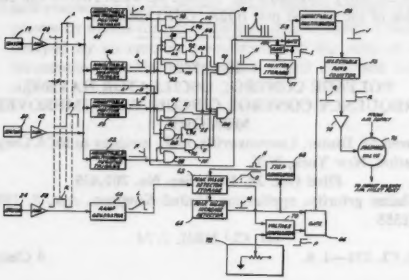


1. A method for detecting the speed of an asynchronous motor, wherein components of the motor current in one frequency band beneath an overtone to the basic tone of the motor current are separated, wherein the frequency difference between the overtone and at least one of said components is determined, and wherein the slip, and thereby the speed of the motor, is determined from the frequency difference.

4,358,735
BIDIRECTIONAL INCREMENTAL ENCODING SYSTEM FOR MEASURING MAXIMUM FORWARD ANGULAR DISPLACEMENT OF A BIDIRECTIONALLY ROTATABLE ROTATING SHAFT

John T. Boys, Birkenhead, New Zealand, assignor to SPS Technologies, Inc., Jenkintown, Pa.

Division of Ser. No. 818,511, Jul. 25, 1977, Pat. No. 4,185,701, which is a continuation of Ser. No. 579,110, May 19, 1975, abandoned. This application Sep. 26, 1979, Ser. No. 78,983
Int. Cl.[3] G01B *7/14;* G01P *3/48, 3/54*
U.S. Cl. 324—208 9 Claims



1. In a rotary motion device, a bidirectional incremental encoding system for measuring maximum forward angular displacement of a bidirectionally rotatable rotating shaft comprising:

an encoder operatively mounted on the shaft for rotation therewith including

a plurality of indicia each at a fixed radius from center of the shaft, each indicium being spaced equidistantly from an adjacent indicium;

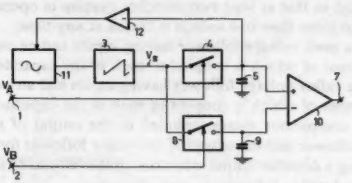
first and second sensing means each juxtapositioned from said encoder opposite said indicia at a spaced circumferential interval for sensing the passage of said indicium and issuing respective output signals indicative thereof in phase quadrature relationship to each other; and

direction determining means for receiving said first and second sensing means output signals and for producing respective forward and reverse angular rotation signals, said direction determining means further including bidirectional counting means for counting said forward angular rotation signals in a first direction and for counting said reverse angular rotation signals in a second direction, means for inhibiting said bidirectional counting means from counting said forward angular rotation signals when said counting means exhibits a predetermined count, said counting means counting said reverse angular rotation signals in said second direction from said predetermined count and counting said forward angular rotation signals in said first direction toward said predetermined count, gate means enabled when said bidirectional counting means exhibits said predetermined count to pass said forward angular rotation signals, and means for counting said forward angular rotation signals passed by said gate means.

4,358,736
PHASE COMPARISON CIRCUIT

Jacob De Boer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 10, 1980, Ser. No. 168,840
Claims priority, application Netherlands, Jul. 17, 1979, 7905540
Int. Cl.[3] G01R *25/04*
U.S. Cl. 328—133 6 Claims

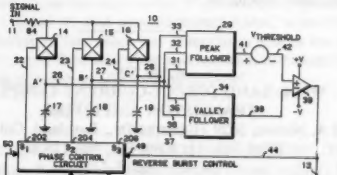


1. A phase comparison circuit for comparing the phase of a first train of pulses with that of a second train of pulses comprising, first and second inputs for receiving said first and second pulse trains, respectively, a sawtooth generator having a control input and constructed to generate at an output thereof a sawtooth signal, a first sampling circuit having a signal input connected to said generator output and a sampling input coupled to said second input for sampling the sawtooth signal at said generator output under the control of the pulses of the second pulse train, a second sampling circuit having a signal input coupled to said generator output and a sampling input coupled to said first input for sampling the sawtooth signal at said generator output under the control of the pulses of the first pulse train, means coupling said sawtooth generator control input to the second sampling circuit so that the sawtooth signal generated is phase-locked to a first pulse train applied to said first input, and a differencing circuit having first and second inputs coupled to the respective outputs of said first and second sampling circuits for determining the difference between the values of the samples taken by the first sampling circuit and those of the second sampling circuit.

4,358,737
DIGITALLY CONTROLLED BANDWIDTH SAMPLING FILTER-DETECTOR

Robert M. Bennett, Ham Lake, Minn., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 16, 1980, Ser. No. 197,407
Int. Cl.[3] H03K *9/06, 17/16*
U.S. Cl. 328—138 10 Claims



1. An improved sampling filter for processing an input signal applied to an input terminal to detect at least one desired tone of a plurality of tones, comprising:

(a) a resistor, coupled to the input terminal;

(b) a plurality of switch means, coupled to the resistor, each switch means including an output and a control input;

(c) an individual capacitor coupled to the output of each switch means and each capacitor coupled to a reference voltage;

(d) control means, coupled to the switch means control inputs, for activating each switch means for a switching period equal to approximately one-half the period of the desired tone, said control means including means for successively opening and closing said switching means at a frequency higher than the product of the frequency of the desired tone multiplied by said plurality of switch means, and so that at least two switches overlap in operation but no more than one switch is closed at any time;

(e) a peak voltage follower having inputs and an output, an input of which is coupled to each of the capacitors;

(f) a valley voltage follower having inputs and an output, an input of which is coupled to each of the capacitors;

(g) comparator means, coupled to the output of the peak follower and the output of the valley follower for providing a detector output when one of the outputs of said peak and valley follower exceeds the other.

4,358,738

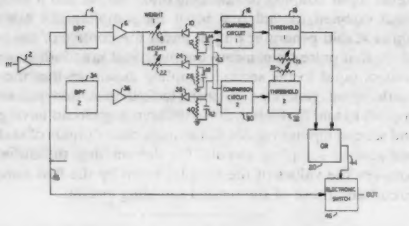
SIGNAL PRESENCE DETERMINATION METHOD FOR USE IN A CONTAMINATED MEDIUM

Leonard R. Kahn, 70 N. Grove St., Freeport, L. I., N.Y. 11520

Filed Jun. 7, 1976, Ser. No. 693,716

Int. Cl.³ H03B *1/00, 1/04;* H03K *5/153, 5/22*

U.S. Cl. 328—165 **16 Claims**



16. A method of detecting the presence of a signal comprising:

comparing at least one spectral characteristic of the input wave with the corresponding spectral characteristic of one or more types of noise,

also further comparing at least one waveshape characteristic of the input waves with the corresponding characteristic of a type of noise,

and indicating signal only if all of the comparisons made indicate mismatch.

4,358,739

WIDE-BAND DIRECT-CURRENT COUPLED TRANSISTOR AMPLIFIER

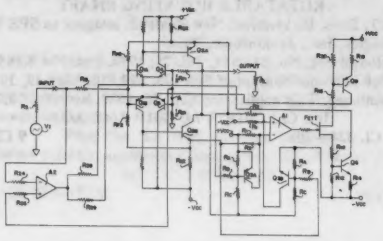
David A. Nelson, 3029 Hiawatha Dr., Loveland, Colo. 80537

Filed Feb. 11, 1980, Ser. No. 120,138

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—255 **7 Claims**

1. A wide-band direct-current coupled amplifier comprising: a high-frequency negative-feedback symmetrical amplifier including a first pair of transistors (Q1A, Q1B) and a second pair of transistors (Q2A, Q2B), each having emitter, collector and base electrodes, and further including series-shunt and shunt-series negative feedback circuitry interconnecting the electrodes of said transistors; and a high-gain low-frequency amplifier (A1) connected to two of the electrodes of the transistors of the first pair (Q1A, Q1B) to increase the gain of the transistors of the first pair at low frequencies so that the feedback circuitry maintains the voltage between two of the electrodes of the second pair (Q2A, Q2B) constant.



4,358,740

VOLTAGE CONTROL OSCILLATOR HAVING FREQUENCY CONTROL CIRCUIT WITH IMPROVED MEMORY

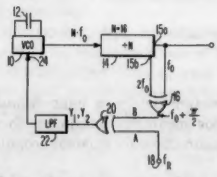
Konrad M. Dinter, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 28, 1980, Ser. No. 201,435

Claims priority, application United Kingdom, Apr. 8, 1980, 8011555

Int. Cl.³ H03L *7/14*

U.S. Cl. 331—1 A **5 Claims**



1. A method for controlling the frequency of an oscillator in accordance with a reference frequency signal, said method comprising generating a signal derived from said oscillator and having a substantially 90° phase shift with respect to the reference signal, both of said signals having a substantially 50% duty cycle, phase detecting said two signals using a first exclusive-OR gate to produce a phase detector output signal, filtering said output signal to produce a frequency control signal, whereby said control signal has substantially the same amplitude regardless of the presence or absence of said reference signal, and applying said control signal to said oscillator, said generating step comprising frequency dividing the oscillator signal to produce a first signal having substantially the same frequency as that of the reference signal and a second signal having a frequency twice said first signal, and applying said first and second signals to a second exclusive-OR gate.

4,358,741

MICRO TIME AND PHASE STEPPER

Roy Nardin, Farmingville, N.Y., assignor to ILC Data Device Corporation, Bohemia, N.Y.

Filed Sep. 17, 1979, Ser. No. 75,971

Int. Cl.³ H03H *11/20;* H03L *7/06*

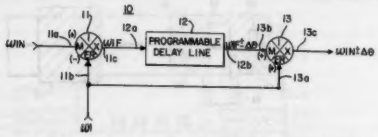
U.S. Cl. 331—2 **28 Claims**

16. Apparatus for imparting a delay to an input signal having a predetermined frequency fin comprising:

means for deriving an intermediate signal from said input signal, said intermediate signal having a frequency less than said input signal;

programmable delay generator means having an input for receiving said intermediate signal, said programmable delay generator means including programmable delay input means, whereby a delay is imparted to said intermediate signal appearing at the output of said programmable delay generator means, which delay is a function of the setting of said programmable delay input means; and

U.S. Patent Nov. 9, 1982 Sheet 1 of 2 4,358,741



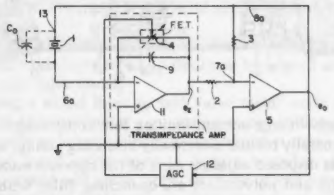
means responsive to the output of said programmable delay generator means for generating an output signal which is delayed by an amount proportional to the ratio of the frequencies of said intermediate signal and said input signal.

4,358,742

TRANSIMPEDANCE OSCILLATOR HAVING HIGH GAIN AMPLIFIER

Lincoln S. Ferriss, Lincoln Park, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Mar. 7, 1980, Ser. No. 128,020
Int. Cl.³ H03B 5/32
U.S. Cl. 331—158 **13 Claims**



1. A transimpedance oscillator comprising:

a crystal resonator having first and second terminals and having a motional resistance (R_m);

an operational amplifier having an inverting input, a non-inverting input, and an output, the first terminal of said resonator coupled to the inverting input of said amplifier, the non-inverting input of said amplifier connected to ground to thereby establish a virtual ground at said inverting input to substantially eliminate changes in the frequency of oscillation due to capacitance variations between the inverting terminal and actual ground;

impedance means coupling the inverting input and the output of said operational amplifier for compensating changes in R_m thereby maintaining the frequency of oscillation equal to the frequency of resonator series resonance; and

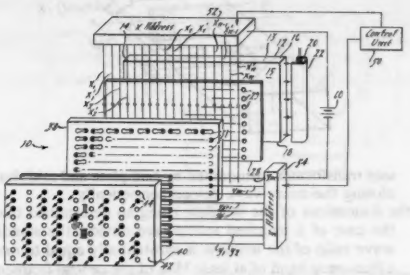
means coupling the output of said operational amplifier and the second resonator terminal in a positive feedback loop between the first resonator terminal and the second resonator terminal.

4,358,743

LIGHT MODULATOR

John J. Lambe, Birmingham; Shaun L. McCarthy, Ann Arbor, both of Mich., and Henry L. Stadler, Washington, D.C., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 9, 1980, Ser. No. 167,174
Int. Cl.³ G09F 9/30
U.S. Cl. 332—7.51 **7 Claims**



1. A device for modulating electromagnetic radiation transmitted from a source comprising:

means in the path of said radiation for providing a fluid-tight cavity having first and second chambers, wherein said first one of said chambers is transparent and said second one of said chambers is opaque to said radiation;

an opaque element within said cavity and movable between said first and second chambers, wherein said opaque element obstructs transmission of said radiation in said first chamber when located within said first chamber and does not obstruct said first chamber transmission when located within said second chamber and said element has a predetermined value of specific gravity;

means including a first switching electrode in said first chamber, a second switching electrode in said second chamber and a common electrode in said cavity spaced from said first and second switching electrodes for controlling the movement of said element between first and second chambers;

said controlling means further includes means for selectively applying an electrical potential between said common electrode and said first electrode to effect movement of said element from said first chamber to said second chamber and for selectively applying an electrical potential between said common electrode and said second electrode to effect movement of said element from said second chamber to said first chamber; and

a transparent fluid dielectric occupying the remainder of said cavity and having a value of specific gravity approximately equal to said predetermined value, whereby the application of said electrical potential produces ion injection into said fluid dielectric and resultant turbulent forces on said element to effect its movement.

4,358,744

IMPEDANCE MATCHED DIELECTRIC WINDOW

Jacques Tikes, Paris, France, assignor to Thomson-CSF, Paris, France

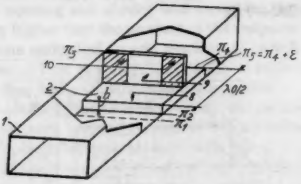
Filed Dec. 12, 1980, Ser. No. 215,795
Claims priority, application France, Dec. 18, 1979, 79 30937
Int. Cl.³ H01P 1/08, 5/02
U.S. Cl. 333—33 **11 Claims**

1. A microwave window in a microwave device, wherein said window comprises:

a half-wave impedance transformer, whose wavelength corresponds to the central frequency of the window;

the remainder of the window being constituted by at least

one inductive shutter and one dielectric plate, said dielectric plate having a small thickness substantially equal to the thickness of said shutter, said inductive shutter and said dielectric plate being mounted above the half-wave transformer at its middle and the assembly constituted by



said transformer surmounted by said plate and said shutter closing the microwave device hermetically;

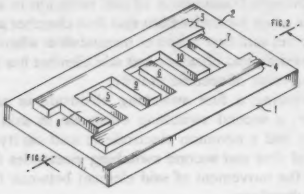
the dimensions of the window being so determined that in the case of a matched microwave device, the standing-wave ratio of the window is substantially equal to one in a frequency band of at least 35% of the central frequency.

4,358,745

SEMICONDUCTOR SURFACE ACOUSTIC WAVE DEVICE

Robert W. Keyes, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,196
Int. Cl.³ H03H *9/42, 9/64;* H01L *21/02*
U.S. Cl. 333—155 **10 Claims**



1. In a device wherein semiconductor signal processing and surface wave propagation are employed in single substrate the improvement for surface wave propagation to eliminate the use of multi-material substrates comprising a monolithic semiconductor material substrate having a surface orientation and a direction of propagation in which said surface wave velocity is affected by doping with at least one of donors and acceptors, and a doping level in at least a region of said substrate operable to reduce the effect of temperature on the propagation time of a surface acoustic wave in said semiconductor material.

4,358,746

ROTARY COUPLING JOINT

Coleman J. Miller, Arnold, Md., and James K. Conn, Indialantic, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,091
Int. Cl.³ H01P *1/06*
U.S. Cl. 333—261 **3 Claims**

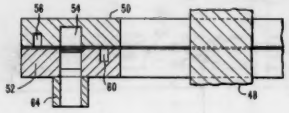
1. A coupling device comprising:

(a) first and second surfaces each having first and second grooves therein, each having substantially flat wall and bottom portions to form a rectangular cross-section, said bottom portion being narrower than said wall portion;

(b) means for positioning said first and second surfaces adjacent each other such that said first grooves form a circular section of divided wall waveguide with said second grooves being on opposite sides of said split wall waveguide to form chokes which prevent leakage of RF energy from said split wall waveguide along said split wall;

(c) first and second "T" coupling sections intersecting each of the narrow walls of said split wall waveguide; and

(d) an isolation device comprising first and second plate-like portions, said first portion being affixed to said short wall of said split waveguide at a point where said short wall



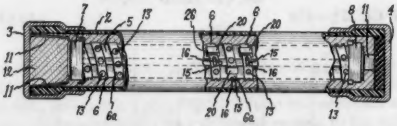
intersects said "T" coupling section, said second portion being affixed to the end of said first plate-like portion to form an insulator having a first portion which is affixed to the short wall of said split wall waveguide and extends inwardly toward the opposite short wall of said split wall waveguide and a second portion affixed to said portion and extending along said split wall waveguide in a direction substantially parallel to said narrow walls.

4,358,747

CURRENT-LIMITING FUSE WITH IMPROVED MEANS FOR INTERRUPTING LOW OVERCURRENTS

John E. Zlupko, Marlton, N.J., and Ben L. Damsky, Philadelphia, Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Jul. 1, 1981, Ser. No. 279,390
Int. Cl.³ H01H *85/38*
U.S. Cl. 337—273 **11 Claims**



1. A high-voltage current-limiting fuse comprising:

(a) a generally tubular electrically insulating casing, terminal means disposed adjacent each of the opposite ends of the casing, and pulverulent arc-quenching filler within said casing,

(b) a ribbon-type fusible element disposed within said filler and electrically interconnecting said terminal means,

(c) means at a predetermined location on said fusible element for causing said fusible element to melt at said predetermined location in response to prolonged overcurrents of relatively low value, thereby initiating an arc at said location when said prolonged overcurrents have persisted for a predetermined duration,

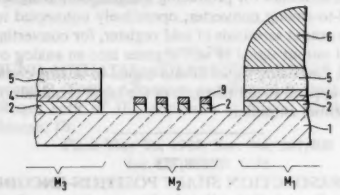
(d) gas-evolving means for increasing the arc voltage developed by said arc comprising an electrical insulating member disposed about said fuse element in the region of said predetermined location and at a point sufficiently close to said predetermined location that at least a portion of said arc burns within said insulating member and causes vapors to be evolved from the material of said insulating member,

(e) said insulating member being of a material that evolves substantially no vapors or gases at the temperatures reached by said member prior to arc-initiation during prolonged overcurrents of up to one hour in duration.

4,358,748
THIN FILM CIRCUIT

Heiko Gruner, and Georg Zimmermann, both of Gerlingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 1, 1980, Ser. No. 117,452
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906813
Int. Cl.³ H01L *49/02*; H01C *17/12*
U.S. Cl. 338—25 22 Claims



1. In an electronic thin film circuit comprising a substrate (1) of insulating material, a valve metal layer (2) covering a part of said substrate and forming a first (M_1) and at least one further (M_2, M_3) pattern, said first pattern constituting electrically conductive connecting means, said second pattern constituting an electronic circuit element, and a nickel layer (5) positioned over said valve metal layer in said first pattern, and a soft solder layer (6) covering at least a part of said nickel layer (5) the improvement comprising a boundary layer (4) comprising said valve metal, an oxide of said valve metal, nickel, nickel oxide and mixed phases thereof integral with and between said valve metal layer and said nickel layer, said boundary layer having been formed by forming an oxide layer having a thickness between 3 and 10 nm on said valve metal, applying said nickel layer and applying sufficient energy to form said boundary layer of valve metal, valve metal oxide, nickel oxide, nickel and mixed phases thereof by diffusion either during or subsequent to applying said nickel layer.

12. A method for manufacturing an electronic thin film circuit on an insulating substrate (1), comprising the steps of depositing a valve metal layer (2) on said substrate by cathode sputtering;

oxidizing said valve metal layer, thereby creating a valve metal oxide layer having a thickness between 3 and 10 nm on said valve metal;

applying a nickel layer to said valve metal oxide layer by cathode sputtering, at a sputtering energy sufficiently high to cause an intermetallic diffusion of nickel atoms into said valve metal oxide layer to form a boundary layer (4) comprising said valve metal, an oxide of said valve metal, nickel, nickel oxide and mixed phases thereof, whereby a three-layer system is created on said substrate; and

etching said three-layer system to create predetermined patterns constituting circuit elements of said thin film circuit.

4,358,749
OBJECT DETECTION

Michael A. G. Clark, North Baddesley, England, assignor to Redland Automation Limited, Winchester, England

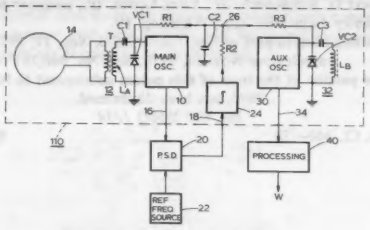
Filed Oct. 31, 1980, Ser. No. 203,078
Claims priority, application United Kingdom, Nov. 21, 1979, 7940182
Int. Cl.³ G08B *13/26*; G08G *1/01*
U.S. Cl. 340—38 L 17 Claims

1. An object detection installation comprising:

a main oscillator circuit having a resonant circuit for determining the oscillator output frequency, the frequency determining elements of the resonant circuit including an object detection inductance sensitive to the presence of an object in the vicinity thereof and a voltage-controlled capacitance;

a source of a reference frequency signal;

a phase-sensitive detector arrangement having respective inputs connected to receive the main oscillator frequency output and reference frequency signal and having its output connected to said voltage-controlled capacitance to supply a control voltage thereto whereby the main oscillator output frequency is locked to that of the reference frequency signal;



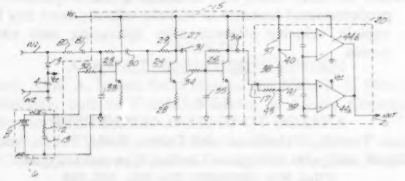
an auxiliary, voltage-controlled oscillator connected to the output of the phase-sensitive detector arrangement to be responsive thereto and provide an output signal whose frequency changes in dependence on changes in said object detection inductance; and

means for processing said auxiliary output signal to provide an object detection signal.

4,358,750
VEHICLE ALARM SYSTEM HAVING A VIBRATION-SENSITIVE MOTION DETECTOR

James B. Webster, 1121 S. Jackson St., Santa Ana, Calif. 92704

Continuation-in-part of Ser. No. 721,511, Sep. 8, 1976, abandoned. This application Oct. 20, 1978, Ser. No. 953,199
Int. Cl.³ B60R *25/00*
U.S. Cl. 340—65 10 Claims



1. An alarm system for a vehicle which is subject to acceleration and motion which may be induced by tampering or natural causes, said alarm system comprising:

acceleration sensing means responsive to vehicle acceleration to provide an acceleration signal having an amplitude and frequency which vary with characteristics of the acceleration of the vehicle;

said acceleration sensing means including a piezo-ceramic device for generating said acceleration signal and a seismic mass coupled to the piezo-ceramic device;

bandpass filter means for attenuating frequencies of the acceleration signal induced by said natural causes and passing preselected frequencies of the acceleration signal induced by said tampering to provide a filtered acceleration signal, substantially all of said preselected frequencies being less than 40 Hertz;

first means responsive to the amplitude of the filtered acceleration signal being above a predetermined level for providing an initiate timing signal;

interval timing means responsive to the initiate timing signal to provide an alarm activation signal; and

means responsive to at least one predetermined condition for inhibiting the interval timing means to prevent the interval timing means from providing the alarm activation signal.

4,358,751

AUTOMATICALLY CANCELLING TURN SIGNAL APPARATUS

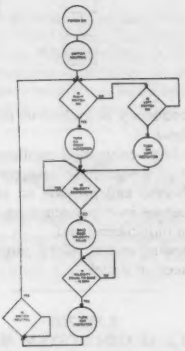
Robert D. Roudebush, Jr., Long Grove, Ill., assignor to Signal Sentry Industries, Inc., Wheeling, Ill.

Continuation-in-part of Ser. No. 397,675, Sep. 17, 1973. This application Nov. 14, 1978, Ser. No. 960,797

The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.

Int. Cl.³ B60Q *1/34*

U.S. Cl. 340—73 **8 Claims**



1. An automatically cancelling turn signal apparatus for a powered vehicle comprising:

left turn and right turn indicator means;

switch means for selectively activating said indicator means; and

means for inactivating said indicator means responsive to a predetermined increase in vehicle velocity over any base vehicle velocity attained after activating said switch means.

4,358,752

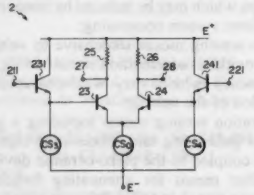
ANALOG-TO-DIGITAL CONVERTER

Haruo Tamada, Yokohama, and Osamu Kudo, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 19, 1980, Ser. No. 208,385

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD **7 Claims**



1. An analog-to-digital converter, operatively connectable to receive an analog input signal, comprising:

a differential amplifier, having input terminals, one of which is operatively connectable to receive the analog input signal and an output terminal, including a pair of transistors operatively connected in a differential relationship each one of the transistors of said pair of transistors having an emitter, each one of the emitters having a different emitter area, the current density of the emitter current of one of said pair of transistors being made different from that of the other one of said pair of transistors by the difference in the emitter areas, and said differential amplifier operating with a predetermined offset voltage in dependence upon the emitter areas;

a register having an input operatively connected to the output terminals of said differential amplifier and having output terminals for producing a digital output signal; and

a digital-to-analog converter, operatively connected to one of the output terminals of said register, for converting the digital output signal of said register into an analog output signal, the analog signal of said digital-to-analog converter being applied to another one of the input terminals of said differential amplifier.

4,358,753

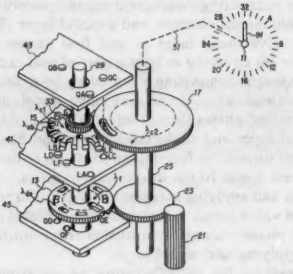
HIGH RESOLUTION SHAFT POSITION ENCODER

Michael R. Cascini, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 16, 1981, Ser. No. 244,428

Int. Cl.³ G08C *9/00*

U.S. Cl. 340—347 P **15 Claims**



1. Shaft position encoder means comprising:

first means for generating a signal σ_1 as said shaft rotates an angle α_1, said first means including a coded track CDT_1 and an associated sensor means SEN_1 between which relative movement is caused as said shaft rotates, said first means requiring, as a condition for generating a signal σ_1, an appropriate alignment between the sensor means SEN_1 and a predetermined part of said track CDT_1, said first means further including controlling means, responsive to rotation of said shaft, for allowing one or more predetermined occurrences of said alignment, but less than all occurrences of said alignment, to result in the generation of a signal σ_1,

second means for generating a signal σ_2 as said shaft rotates an angle α_2, where $\alpha_2 \neq \alpha_1$, said second means including a coded track CDT_2 and an associated sensor means SEN_2 between which relative movement is caused as said shaft rotates, and

third means for generating a signal σ_3 as said shaft rotates an angle α_3, said third means including a coded track CDT_3 and an associated sensor means SEN_3 between which relative movement is caused as said shaft rotates,

each of sensor means SEN_1, SEN_2, and SEN_3, (a) being sensitive to the associated one of the three numerically subscripted tracks CDT_1, CDT_2, and CDT_3 and (b) being insensitive to the other two of the three numerically subscripted tracks,

α_3 being related to α_1 and α_2 so that (i) between the Uth occurrence of signal σ_1 and a nearby occurrence of signal σ_2 there occurs a number V of signals σ_3, the number V

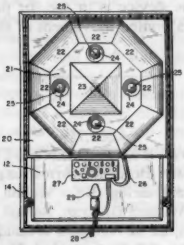
permitting identification of the number U, and (ii) between the Wth occurrence of signal σ_1 and a nearby occurrence of signal σ_2 there occurs a number Y of signals σ_3, the number Y permitting identification of the number W, W being $\neq$U and Y being $\neq$V, whereby, each one of a plurality of signals σ_1 is absolutely identifiable and distinguishable from all the other ones of said plurality of signals σ_1 because between each signal σ_1, of said plurality, and a nearby signal σ_2 there occurs a different number of signals σ_3 which thereby permits identification of the particular signal σ_1.

4,358,754

SOUND-ACTUATED ADVERTISING LIGHT DISPLAY

Raymond R. Young, Glenview, and Donald F. Buck, Elk Grove Village, both of Ill., assignors to Visual Marketing, Inc., Chicago, Ill.

Filed May 26, 1981, Ser. No. 267,408
Int. Cl.³ G08B 5/36
U.S. Cl. 340—815.17 **14 Claims**



1. A sound-actuated light display, comprising:

an octagonally-shaped light reflector having an octagonal base, outer side walls extending away from the base and projecting at an obtuse angle thereto, and a pyramid-shaped portion extending away from the center of the base;

a plurality of lights positioned in the reflector base and arranged symmetrically with respect to the pyramid-shaped portion;

a sound-actuated power switching means connected between the plurality of lights and a power source, for detecting sound in the vicinity of the display and regulating power input to the plurality of lights in response to the variations in the level of the detected sound;

a prismatically textured translucent cover positioned over the reflector, the surface of the cover defining at least one symbol to be advertised; and

a back panel for mounting the reflector, the power switching means and the cover, the back panel adapted for mounting the display in a desired location.

4,358,755

SIGNAL SELECTION CIRCUIT

Cecil Franklin, Middleburg, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

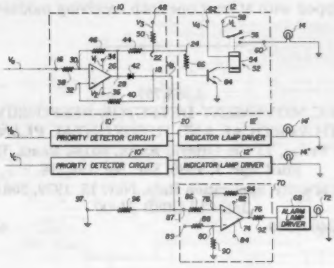
Filed Mar. 9, 1981, Ser. No. 241,895
Int. Cl.³ G08B 26/00
U.S. Cl. 340—518 **13 Claims**

1. A signal selection circuit, including a scan bus, for normally maintaining the scan bus at essentially the same voltage as one of two limiting signals of a plurality of first direct voltage signals which are normally variable within an operating voltage range between a maximum operating voltage and a minimum operating voltage, the two limiting signals being a maximum, i.e., most positive, signal of the plurality of first signals and a minimum, i.e., most negative, signal of the plurality of first signals, the signal selection circuit comprising:

a first direct voltage source for providing a first constant reference voltage disposed outside the normal operating voltage range of the plurality of first signals and displaced from the one limiting signal in the same direction as the other limiting signal is displaced from the one limiting signal;

a load resistor, connected between the first voltage source and the scan bus;

a plurality of operational amplifiers, each having an output, a non-inverting input, and an inverting input, wherein the amplifier non-inverting inputs are respectively connected to receive said first signals, and the amplifier inverting inputs are connected to the scan bus;



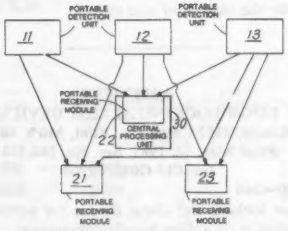
a plurality of diodes, respectively connected between the amplifier outputs and the scan bus, so that each diode, when forward-biased, allows current to flow between the amplifier output connected to the diode and the first voltage source in one direction through the load resistor, the scan bus and the diode, to maintain the scan bus voltage at essentially the same voltage as the first signal applied to the non-inverting input of the operational amplifier connected to the diode, each diode being disposed so that it is forward-biased by an amplifier output voltage generated by the operational amplifier connected to the diode whenever the first signal at the amplifier non-inverting input is the one limiting signal.

4,358,756

ALARM TRANSMISSION SYSTEM

Pierre A. A. A. Morel, Saint Mande, and Marc P. L. Pittavino, Santeny, both of France, assignors to Agence Centrale de Services (ACDS), France

Filed Jun. 18, 1980, Ser. No. 160,580
Claims priority, application France, Jun. 26, 1979, 79 16431
Int. Cl.³ G08B 13/00
U.S. Cl. 340—539 **13 Claims**



1. An alarm transmission system, comprising a plurality of removable and portable autonomous detection units distributed in a space divided into zones, each unit equipped with detectors capable, when activated of generating electrical

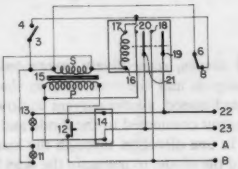
signals; transmission means in each detection unit for transmitting the signals generated by said detectors, said transmission means comprising means for coding and radio-transmitting binary information which is frequency modulated on a carrier frequency; and means for permanently maintaining a strict phase relationship between the carrier frequency and the binary information signal transmitted by the transmission means; a plurality of autonomous portable receiving modules for receiving the signal transmitted by said detection units, each said receiving module being equipped with radio-receiving and decoding means as well as signalling or warning means capable of being activated upon receipt of the signals sent by the detection units and a central information-receiving and processing unit equipped with at least one such receiving module.

4,358,757

SEISMIC MOVEMENT DETECTOR RESPONSIVE IN BOTH VERTICAL AND HORIZONTAL PLANES

Giuseppe Perini, 12 Via Ottavio Ragni, 00194 Roma, Italy

Filed Apr. 1, 1980, Ser. No. 136,298
Claims priority, application Italy, Nov. 13, 1979, 50810 A/79
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—540 **6 Claims**



1. A warning device for detecting occurrence of seismic movements, comprising:

a first pair of electric contacts, one of said contacts of said first pair being vibratile relative to a generally horizontal rest position, the other contact of said first pair being adjustably spaceable from said rest position;

a second pair of electric contacts, in which one of said contacts of said second pair is vibratile relative to a generally vertical rest position, the other contact of said second pair being adjustably spaceable from said rest position;

an electric circuit connected to both said pairs of electric contacts, said circuit being closed when a vibration of sufficient amplitude imparted by an earthquake to the vibratile contact of at least one of said pairs causes it to touch its corresponding adjustable contact; and

at least one warning unit inserted into said circuit and energized by the closure of said circuit.

4,358,758

DOOR LOCKING ALARM DEVICE

David C. Morton, 3152 Curtis Dr., Flint, Mich. 48507

Filed Mar. 16, 1981, Ser. No. 244,294
Int. Cl.³ G08B *13/08*
U.S. Cl. 340—546 **8 Claims**

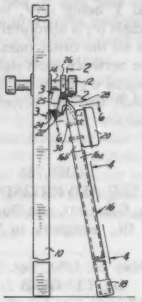
1. A door locking and alarm device for portable use and ready installation on a door handle comprising:

an adjustable length shaft portion;

a non-skid end portion mounted on the lower end of the shaft portion;

a door handle engaging clip fixed to the upper end of said shaft portion and mounted on it substantially aligned to its longitudinal axis; and

an alarm device mounted on said shaft portion and having an actuator therefor in abutment with the inner surface to the



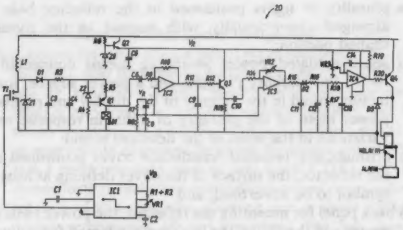
door when the device is in use for providing an alarm responsive to a limited movement of the door inwardly.

4,358,759

MICROWAVE MOVEMENT DETECTOR

James A. C. Stewart; Brian M. Armstrong, both of Belfast; Harold S. Gamble, Banridge; John Mallon, Belfast; Fabian C. Monds, Belfast; William D. Ryan, Belfast, and James Wakefield, Ballygowan, all of Northern Ireland, assignors to The Queens University of Belfast, Belfast, Northern Ireland

Filed Jun. 10, 1980, Ser. No. 158,141
Claims priority, application United Kingdom, Jun. 13, 1979, 7920597
Int. Cl.³ G08B *13/22*; G01S *9/02*
U.S. Cl. 340—554 **24 Claims**

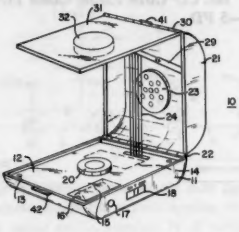


1. A microwave movement detector comprising a microwave generating and receiving module for use in generating and transmitting a microwave signal to be intercepted and reflected by a moving target and for receiving the reflected microwave signal from said target, wherein the microwave generating and receiving module comprises microstrip circuitry in combination with a diode acting as both an oscillator and a mixer, said detector further comprising modulating means for modulating the generated microwave signal so that quantitive information as to target range, velocity and direction can be obtained, whereby the detector operates in accordance with a diplex configuration, wherein said detector includes a transmitter for transmitting the modulated generated microwave signal, and wherein the modulating means repetitively switches the transmitter of the microwave generating and receiving module between two frequencies to provide a signal having two spectral lines separated by gaps between the frequencies.

4,358,760
PORTABLE FIRE ALARM APPARATUS

James Palmer, P.O. Box 1248, Jackson, N.J. 08527

Filed Apr. 23, 1981, Ser. No. 256,853
Int. Cl.³ G08B 17/06, 17/10
U.S. Cl. 340—586 10 Claims



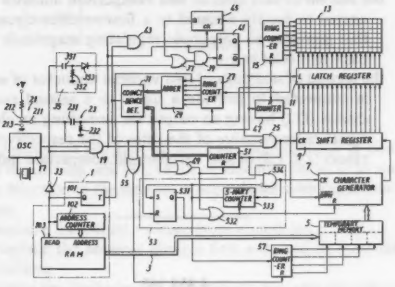
1. A portable fire alarm apparatus, comprising:
a base assembly housing having a flat bottom surface for supporting the same on a horizontal surface, left and right sidewalls, with a front and back wall, said base assembly having an internal hollow,
a central housing section pivotally mounted to the back wall of said base section at a first end of said central section, with said central section having a top convex surface with an inner concave surface with left and right sidewalls, with said central section when pivoted extending upwardly and transverse to said above assembly,
a top planar section pivotally mounted to the top of said central section and capable of being positioned parallel to and above said base assembly,
means coupling said central section to said top section for holding the same in said position,
fire detection means located on the surface of said top planar section as facing said base assembly,
electrical circuit means located in said internal hollow of said base section,
audio alarm indicating means located centrally on the inner surface of said central section, and,
flexible cable means directed from said circuit means in said base section for electrically connecting said detection means and said alarm means with said electrical circuit means, with said cable directed upwardly from said base section to said top section.

4,358,761
DOT MATRIX DISPLAY APPARATUS

Shoji Iwasaki, Tottori, Japan, assignor to Sanyo Electric Co. Ltd., Moriguchi and Tottori Sanyo Electric Co., Ltd., Totori, both of, Japan

Filed Sep. 23, 1980, Ser. No. 189,586
Claims priority, application Japan, Sep. 28, 1979, 54/126070; Sep. 28, 1979, 54/126071; Sep. 28, 1979, 54/135565[U]
Int. Cl.³ G09G 3/20
U.S. Cl. 340—792 38 Claims

1. A dot matrix display apparatus, comprising:
dot matrix display means capable of displaying a plurality (j) of characters, each character being displayed by an arrangement of dots in a plurality (m) of columns by a plurality (n) of rows,
character information providing means for providing character information concerning characters to be displayed,
dot display signal generating means responsive to said character information obtained from said character information providing means for generating dot display signals of said dots in said plurality (m) of columns by said plurality (n) of rows for each character of a plurality (i) of characters, where i is a natural number and i>j,
register means having storing regions of substantially the same number as the total column number of said dot matrix display means for storing dot display signals for driving the corresponding columns of said dot matrix display means,
loading means for loading in said register means in a row sequence the dot display signals of a common row out of said dot display signals as regards the respective characters obtained from said display signal generating means,
row driving means for driving said dot matrix display means in said row sequence,
first detecting means for detecting that said loading means has loaded at least one time the dot display signals of all said plurality (n) of rows in said register means,

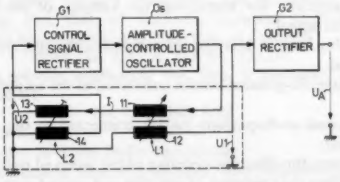


column shifting means responsive to the output of said first detecting means for shifting for each row the columns of said dot display signals being loaded in said register means by means of said loading means, and
second detecting means for detecting that said shifting takes place for all said rows by said plurality (m) of columns by means of said column shifting means,
said character information providing means being responsive to the output of said second detecting means for providing subsequent character information concerning characters to be subsequently displayed to said display signal generating means.

4,358,762
INDUCTIVE TRANSDUCER RESPONSIVE TO DISPLACEMENT ALONG A PATH

Konrad Wolf, Walzbachtal, and Erich Zabler, Karlsruhe, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 25, 1980, Ser. No. 190,491
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940018
Int. Cl.³ G08C 19/08
U.S. Cl. 340—870.35 5 Claims



1. An inductive displacement transducer suitable for indicating the displacement of the fuel injection control rod in an internal combustion engine and utilizing semi-differential variable inductance unit including an adjustable comparison induc-

tor and a variable inductor having a short-circuiting ring movable by a member of which the displacement along a path is to be measured, and further comprising the improvement which consists in that:

both said comparison inductor and said variable inductor of said semi-differential inductance unit are constituted of a first and a second coil magnetically coupled to each other;

one of said coils of said variable inductor of said unit is connected in series with a first coil of said comparison inductor of said unit and the series combination thereof is connected between the output terminal of an amplitude-regulated oscillator and a reference potential such as ground potential;

the second of said coils of said comparison inductor is connected to supply a signal to a first rectifier circuit (G1) that provides an amplitude regulating magnitude to said oscillator (Os) and

the second of said coils of said variable unductor of said unit is connected to provide a signal to a second rectifying circuit (G2) having an output for furnishing an electrical signal representative of the ratio of the respective inductances (L1, L2) of said variable and comparison inductors.

4,358,763

CONTINUOUS-WAVE RADAR RESPONDER HAVING TWO-POSITION SWITCHES

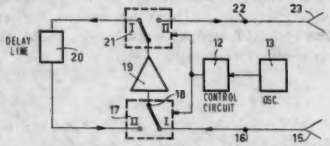
Raymond Strauch, Viroflay, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 9, 1980, Ser. No. 148,116

Claims priority, application France, May 16, 1979, 79 12479

Int. Cl.³ G01S *13/80*

U.S. Cl. 343—55 W **8 Claims**



1. A continuous wave radar responder for receiving a frequency and amplitude-modulated carrier signal, said responder comprising:

a. aerial means for receiving and retransmitting the carrier signal;

b. means for effecting sampling of the received carrier signal at a frequency which is at least double the amplitude-modulation frequency;

c. an amplifier for amplifying the samples of the received carrier signal;

d. a delay line for delaying the samples of the received carrier signal;

e. a first multi-position switch connected to the amplifier input; and

f. a second multi-position switch connected to the amplifier output;

said means for effecting sampling of the received carrier signal controlling the operation of said first and second switches such that they sequentially interconnect the aerial means, the amplifier, and the delay line to effect passage of each sample of the received signal through the amplifier, then through the delay line, and then through the amplifier again before retransmission.

4,358,764

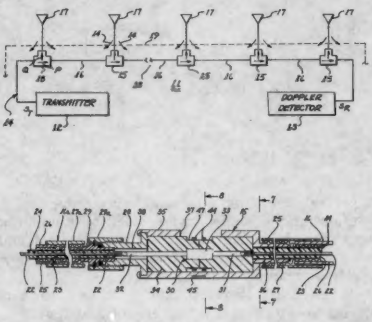
COUPLING UNIT FOR COAXIAL CABLE INCLUDING MEANS FOR RADIATING WAVE ENERGY

James Cheal, Tempe, and Vincent J. McHenry, Scottsdale, both of Ariz., assignors to Southwest Microwave, Inc., Tempe, Ariz.

Filed Jul. 28, 1980, Ser. No. 173,009

Int. Cl.³ G01S *13/56*; G08B *13/24*

U.S. Cl. 343—5 PD **10 Claims**



1. A coupling unit for joining two sections of coaxial cable and for coupling the coaxial cable to an antenna, the coaxial cable having a predetermined characteristic impedance and comprising an inner conductor, a surrounding layer of dielectric material and a conducting sheath surrounding the layer of dielectric material, said coupling unit comprising a central conductor having two end sections and a center section therebetween, each of said end sections being adapted to be connected to the center conductor of a coaxial cable, a cylindrical dielectric member surrounding the end sections and the center section of said central conductor, a metallic sleeve member surrounding said cylindrical dielectric member, the diameter of said two end sections and the diameter of said cylindrical dielectric member providing the same characteristic impedance as that of said coaxial cable, an opening in said metallic sleeve member adjacent the center section of said central conductor, a transmission line coupled to said central conductor at said opening an antenna coupled to said transmission line, the center section of said central conductor having an enlarged diameter for compensating for impedance mismatching due to said opening, and the portion of said cylindrical dielectric member adjacent said opening having a reduced diameter for effecting a desired coupling coefficient between said antenna and said central conductor.

4,358,765

APPARATUS FOR PRODUCING A SINGLE SIDE BAND

Bengt Henoch, Hägersten, and Eilert Berglind, Bandhagen, both of Sweden, assignors to Stiftelsen Institutet for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm, Stockholm, Sweden

Filed Aug. 16, 1979, Ser. No. 67,124

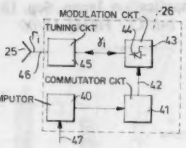
Claims priority, application Sweden, Aug. 25, 1978, 7809017

Int. Cl.³ G01S *13/78*

U.S. Cl. 343—6.5 SS **8 Claims**

1. An apparatus for producing a single side band at systems where a signal of a certain frequency f_o is received, frequency-shifted and retransmitted, characterized in that the apparatus comprises only one diode (44), in which the signal received with the frequency f_o is intended to be reflected, and a commutator circuit (41) capable in repeated sequences to apply on the diode a series of different voltage levels generated in the commutator circuit, which voltage levels are at least three in number, and that a tuning circuit (45) is located between the diode (44) and an aerial (25) for transmitting and preferably also

receiving the signal f_o, which tuning circuit (45) is capable to act upon the amplitude and phase variations occurring at the different voltage levels applied at the diode (44), so that the reflection coefficients γ_i and the characteristics of the tuning



circuit satisfy the condition for a single side band to occur, preferably the below condition, which applies to a single side band of the first order and a number N of voltage levels of equal duration

$$i = \sum_{1}^{N} \frac{\gamma_i}{1 - S_{22}\gamma_i} \cdot e^{j\frac{2\pi}{N} i} = 0 \text{ where } \gamma_i = \frac{V_i}{V_{in}}$$

where V_i is a voltage reflected by the diode, V_{in} is a voltage incoming to the diode, and S_{22} is a non-dimensional factor expressing the impedance of the tuning circuit (45) and the aerial (25) at the diode.

4,358,766

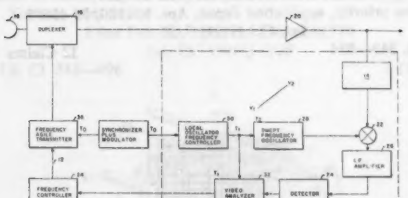
JAMMING SIGNAL REDUCTION SYSTEM

Martin E. Mehron, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jul. 1, 1974, Ser. No. 484,478

Int. Cl.³ G01S 7/36

U.S. Cl. 343—18 E **8 Claims**



1. In a frequency agile radar, apparatus for transmitting a frequency which corresponds to a low jamming frequency, comprising:

means for sampling a portion of the input to the radar during the dead time of the radar receiver;

means for measuring said sampled portion of the input to determine the frequency of the minimum received total jamming power; and

means for controlling the frequency of the signal to be transmitted by the radar on the next pulse to correspond to the frequency of the minimum received total jamming power.

4,358,767

METHOD OF TRACKING FOR TELECOMMUNICATIONS ANTENNAE

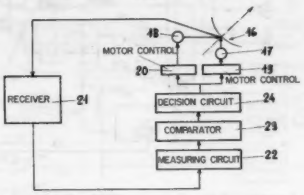
Claude Boireau, Grenoble, France, assignor to Neyrpic, Grenoble, France

Filed Dec. 29, 1980, Ser. No. 220,488

Claims priority, application France, Jan. 8, 1980, 80 00324

Int. Cl.³ G01S 5/02

U.S. Cl. 343—117 R **2 Claims**



1. A method of tracking by antenna, characterized in controlling the driving unit (17, 18) of an antenna (16) so as to aim it in the direction of the satellite in accordance with the following steps:

(a) measure the output voltage from a receiver;

(b) displace the antenna along a first axis, and in a certain direction;

(c) during the displacement, successively measure the output voltage and successively compare each measurement with the previous one;

(d) when a measurement is found to be less than the previous one, change the direction of displacement along the same axis;

(e) during the new displacement, successively measure the output voltage and successively compare each measurement with the previous one;

(f) when a measurement is found to be less than the previous one, stop and then displace in the reverse direction along the same axis for a measured time t1, depending upon the driving speed of the antenna, along this axis and determined so as to be that which provides the best aim at the end of the cycle, then change the axis by 90°;

(g) repeat along this orthogonal axis with another measured time t2 which is a function of the driving speed along this axis and is determined so as to be that which provides the best aim at the end of the cycle, of the steps (a) to (f) with either stopping of the tracking or repetition of a complete cycle (a) to (g), the number of cycles of this type before stopping the tracking being programmable by the user.

4,358,768

RADIO DIRECTION FINDER

Bernhard Ernst; Eckhard Schmengler, and Hans Pichl, all of Munich, Fed. Rep. of Germany, assignors to Rohde & Schwarz GmbH & Co. KG, Fed. Rep. of Germany

Filed Jan. 7, 1981, Ser. No. 223,163

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1980, 3000561

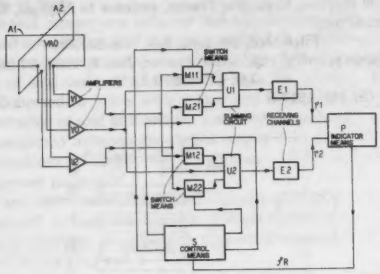
Int. Cl.³ G01S 5/02

U.S. Cl. 343—118 **3 Claims**

1. A radio direction finder comprising:

a multi-element receiving antenna, two separate scanning means coupled to said antenna for simultaneously generating a rightward and a leftward rotating antenna pattern of the same rotating frequency, two separate receivers having approximately the same group delay and including demodulating means for generating two separate bearing signals of AM or FM-type modulation for the rightward

and leftward rotating antenna pattern, respectively, and evaluator and indicator means for obtaining the bearing of



a signal received by the antenna from the phases of the two bearing signals and a reference signal.

4,358,769

LOOP ANTENNA APPARATUS WITH VARIABLE DIRECTIVITY

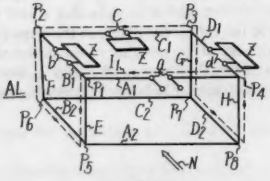
Masahiro Tada, Yokohama; Hirokazu Ichikawa, Hiratsuka; Mitsuo Fukushima, Tokyo; Koya Nakamichi; Koji Ouchi, both of Yokohama, and Yoshio Ishigaki, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 233,387

Claims priority, application Japan, Feb. 15, 1980, 55/18071

Int. Cl.³ H01Q *11/12*

U.S. Cl. 343—742 **4 Claims**



1. A loop antenna apparatus comprising:

a main conductive loop arranged on a first flat surface;

first and second supplemental conductive loops connected to said main conductive loop and arranged on second and third flat surfaces perpendicular to said first flat surface, respectively;

third supplemental conductive loop connected to said first and second supplemental conductive loops and arranged on a fourth flat surface parallel to said first flat surface and perpendicular to said second and third flat surfaces;

first and second signal feeding points provided in said main conductive loop and said first supplemental conductive loop, respectively;

an output terminal; and

means for selectively connecting one of said first and second feeding points to said output terminal.

4,358,770

MULTIPLE FREQUENCY ANTENNA FEED SYSTEM

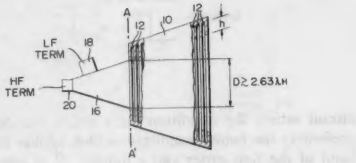
Toshio Satoh, Sagamihara; Motoo Mizusawa, Yokohama, and Fumio Takeda, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,308

Claims priority, application Japan, Sep. 18, 1979, 54/119769

Int. Cl.³ H01Q *13/00*

U.S. Cl. 343—786 **2 Claims**



1. An antenna feed system operative in a multi-frequency band, comprising a corrugated conical horn including a multiplicity of corrugated grooves disposed circumferentially at predetermined equal intervals on the inner surface thereof, and a diplexer for common use with a multiplicity of frequency bands, said diplexer being connected to said corrugated conical horn through a connecting plane, said corrugated grooves having a depth selected to be between one quarter and one half of the wavelength of the lowest one of said multiplicity of frequency bands, and said depth also being selected to be from an odd multiple of one quarter of the wavelength of each of the remaining frequency bands to the sum of said odd multiple of one quarter of the wavelength of each of said remaining frequency bands and one quarter of the wavelength of each of said remaining frequency bands; wherein said connecting plane has an inside diameter selected not to be less than 2.6 times a wavelength corresponding to a selected frequency where said depth of said corrugated grooves is between three quarters and one wavelength at said selected frequency.

4,358,771

POWER DISTRIBUTION TYPE ANTENNA

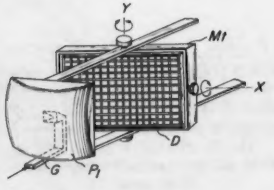
Kou-Chang Hsieh, Yonezawa, Japan, assignor to Yamagata University, Yamagata, Japan

Filed Mar. 30, 1981, Ser. No. 249,237

Claims priority, application Japan, Apr. 9, 1980, 55-45695

Int. Cl.³ H01Q *3/26*

U.S. Cl. 343—854 **13 Claims**



1. A power distribution antenna comprising:

a primary projector for radiating an electromagnetic wave in a predetermined propagation direction; and

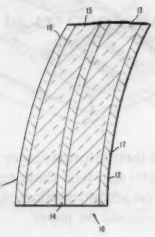
a plurality of spaced planar diplexers located in the path of said electromagnetic wave and spaced from said primary projector, a planar surface of each of said diplexers being positioned at a predetermined angle with respect to said propagation direction, each of said diplexers comprising a dielectric base and a lattice shaped metallic film deposited thereon in a predetermined pattern.

4,358,772

CERAMIC BROADBAND RADOME

Hyman Leggett, Chatsworth, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 30, 1980, Ser. No. 147,889
Int. Cl.³ H01Q 1/42
U.S. Cl. 343—872 10 Claims



1. A process for fabricating a ceramic broadband radome which includes:

(a) forming a first layer comprising fused silica which has been compounded for permeability and minimum shrinkage and fired at a particular temperature;

(b) forming on one surface of said first layer a second layer comprising permeable silicon nitride deposited at substantially the same temperature used to form said first layer;

(c) forming on said second layer a third layer comprising permeable fused silica fired at substantially said temperature;

(d) forming on said third layer, a fourth layer comprising dense silicion nitride deposited at substantially said temperature; and

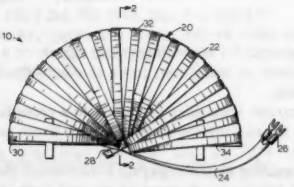
(e) forming on the exposed surface of said first layer a fifth layer comprising dense silicon nitride deposited at substantially said temperature.

4,358,773

ANTENNA FOR TELEVISION RECEPTION

John T. Staub, Jr., and Lucy A. Staub, both of 302 E. Joppa Rd., Towson, Md. 21204

Filed Feb. 23, 1981, Ser. No. 236,770
Int. Cl.³ H01Q 9/28
U.S. Cl. 343—896 6 Claims



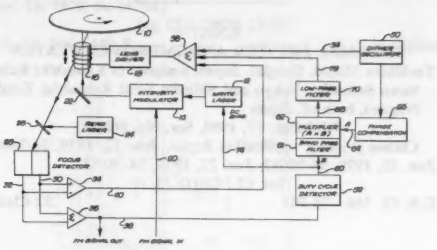
1. In an antenna having a frame, including means for holding the frame upright and wire coiled on the frame, the improvement comprising: said wire being flat twin-lead conductor, said frame being of dielectric material in semi-circular shape, and the wire coiling forming a plurality of similar-size and similar configuration loops with each loop passing around a central lower portion of the semicircular shape and then around a respective one of a plurality of equally spaced locations on the circular periphery of the frame.

4,358,774

APPARATUS AND METHOD FOR CONTROLLING FOCUS IN A RECORDING SYSTEM

Richard L. Wilkinson, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Jul. 14, 1980, Ser. No. 167,941
Int. Cl.³ G01D 15/14
U.S. Cl. 346—1.1 16 Claims



13. For use in a recording system employing a radiant writing beam to record an information-carrying signal on a moving recording surface, a method for automatically controlling the focus of the beam on the recording surface, said method comprising:

dithering the focus condition of the beam in an oscillatory manner in accordance with a dither signal;

reading the information-carrying signal back from the recording surface immediately after it has been recorded;

processing the information-carrying signal to obtain a duty-cycle signal indicative of the duty cycle of the signal obtained in said reading step with respect to its average value;

comparing the duty cycle signal with the dither signal to obtain a focus correction signal; and

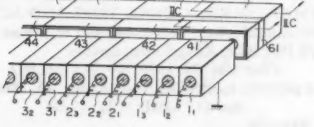
correcting the beam focus in accordance with the correction signal obtained in said comparing step.

4,358,775

INK JET PRINTING APPARATUS

Koichiro Jinnai, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 171,696
Claims priority, application Japan, Jul. 28, 1979, 54-96542; Jul. 28, 1979, 54-96543
Int. Cl.³ G01D 15/18, 18/00
U.S. Cl. 346—75 2 Claims



1. An ink jet printing apparatus comprising first and second ink jet heads for ejecting first and second jets of ink respectively at a predetermined frequency of pressure oscillation so that the first and second ink jets separate into droplets at a predetermined position and one charging electrode means for applying a pulsating electric field to the first and second ink jets at said position to induce an electric charge thereon, the charging electrode means alternatively applying the pulsating

electric field to the first and second ink jets at first and second different relative charging time phases; and

control means for controlling the first and second ink jet heads to eject the first and second ink jets with first and second relative pressure oscillation time phases so that the first ink jet is charged by the pulsating electric field of the first charging time phase and the second ink jet is charged by the pulsating electric field of the second charging time phase.

4,358,776

THERMAL PRINTER AND IMPROVED PLATEN

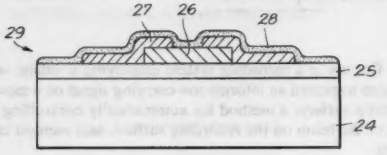
Yoshihiro Mitsui, Shiojiri, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagano, both of, Japan

Filed Jun. 17, 1980, Ser. No. 160,391

Claims priority, application Japan, Jun. 22, 1979, 54-78881; Jun. 22, 1979, 54-78882; Jun. 22, 1979, 54-78883

Int. Cl.³ G01D *15/10*

U.S. Cl. 346—76 PH **22 Claims**



1. A thermal printer for printing on a thermally sensitive print paper comprising:

thermal print head means including a base having a ceramic body, a glass layer covering said base, at least one heating element disposed on said glass layer for generating thermal energy for printing on a thermal paper, at least one electrode covering said glass layer and heating element and a protective layer of substantially uniform thickness covering said glass layer, heating element and electrode;

a platen disposed in a position opposite to said thermal print head means including a base and a platen element protruding from the surface of said base towards said thermal print head means, said platen element formed of an elastic and deformable material;

bias means for biasing said platen element of said platen against said thermal print head means for pressing thermal print paper in contact with said protective layer on said heating element in said thermal print head means; and

print control means for controlling printing by selectively heating said heating element in said thermal print head means for printing on a thermally sensitive paper disposed between said thermal print head means and said platen.

4,358,777

DEVICE FOR RECORDING AND HANDLING OF INFORMATION REGARDING TIME AND ACTIVITIES

Dag Bille, Kungsbacka, Sweden, assignor to Svensk Ideutveckling AB Dag Bille, Kungsbacka, Sweden

Filed Dec. 29, 1980, Ser. No. 221,002

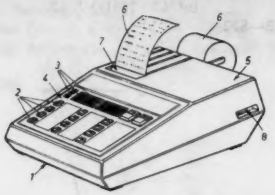
Claims priority, application Sweden, Jan. 25, 1980, 8000590

Int. Cl.³ G01D *9/32, 15/04*

U.S. Cl. 346—82 **1 Claim**

1. A time and activity recorder for recording, handling and documentation of the duration of various categories of work sequences and the like, such as down times, change of tools, brakes, production and the like, comprising

a pulse generator adapted to generate a pulse train with predetermined and constant frequency, manually operated input devices adapted to generate signals and provide these to a central processing unit adapted to guide the pulse train to at least one of a plurality of storage cells provided in the time and activity recorder where the pulses are accumulated and/or stored, at least one further manually operated input device operably connected to said central processing unit to activate said central processing unit to scan the storage cells and/or the input



devices and read their information or position and thereafter compute results and feed them to a printer adapted to print the results on an information carrier, for example by printing out characters on paper.

4,358,778

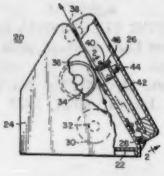
ADJUSTABLE BLADE FOR FACSIMILE RECORDING MACHINE

John M. Alden, Needham, and George C. Williams, South Easton, both of Mass., assignors to Alden Research Foundation, Brockton, Mass.

Continuation of Ser. No. 133,484, Mar. 21, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 351,115

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—101 **18 Claims**



1. Apparatus for recording grahic signals on a web by electrical erosion of metal ions from an electrode, the apparatus comprising:

an electrode with sides extending to a recording edge;

means for moving the electrode on a linear path across the web;

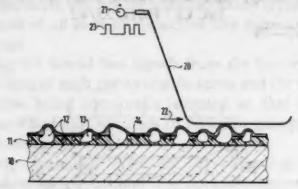
linear guiding means engaging both sides of the electrode to hold the electrode straight on said path, the recording edge of the electrode eroding toward the guiding means, and adjusting means including a manually adjustable pusher on the guiding means engaging the electrode, the pusher being manually adjustable from an initial position, in which it holds an unworn electrode at an initial extent from the guiding means, to an adjusted position outward of the guiding means in which it pushes a worn blade to the same extent thereby to compensate for erosion of the electrode.

4,358,779

METALIZED RECORDING MEDIUM

Richard Höhn, Stuttgart; Werner Jung, Waiblingen, and Gerhard Winter, Remshalden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 1, 1981, Ser. No. 250,012
Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017449
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 16 Claims



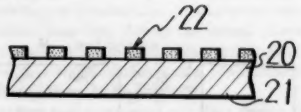
1. Metalized recording medium having
a substrate carrier (10);
a contrast coating layer (11) applied over the substrate carrier;
a metal layer (14) deposited over the contrast coating layer, said metal layer having a thickness such that it can be burned off by an energized electrode (20),
and
surface roughening pigment particles (12, 13) included in the contrast layer (11),
wherein some of the pigment particles (12, 13) have a diameter which is greater than the thickness of the contrast layer (11) absent said surface roughening pigment particles (12, 13).

4,358,780

OPTICAL INFORMATION RECORD MEMBER

Noboru Sato, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,178
Claims priority, application Japan, Jul. 18, 1980, 55-99252
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 5 Claims



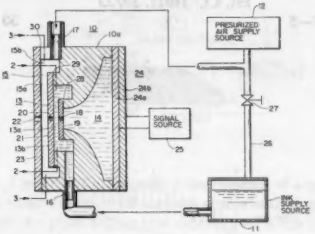
1. An optical information record member, comprising a substrate and an optical information carrier layer formed on said substrate, said layer being composed of 40 to 80 atomic % of In and 60 to 20 atomic % of one of Se and S, said layer being changed into a material which is insoluble to alkaline etchant upon exposure to a light beam modulated according to information signals.

4,358,781

INK JET WRITING HEAD WITH SPACER IN CAPILLARY CHAMBER

Kiyoshi Yamamori, Yokohama; Masayoshi Miura, Sagamihara, and Akira Mizoguchi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Nov. 6, 1980, Ser. No. 204,713
Claims priority, application Japan, Nov. 7, 1979, 54-144618; Nov. 14, 1979, 54-147947
Int. Cl.³ G01D *13/18*
U.S. Cl. 346—140 R 24 Claims



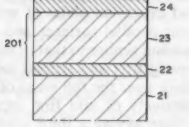
1. An ink jet writing head for applying ink droplets to a surface, comprising a housing shaped to form an inner liquid chamber for containing ink to be applied to the surface, said housing having an electromechanical transducer for generating short-duration increases of ink pressure in said inner liquid chamber, a dividing plate having therein a connecting channel and secured to the housing opposite to said transducer, a nozzle plate having therein an ink discharge nozzle axially aligned with said connecting channel and secured to the housing at a predetermined distance from said dividing plate to define an outer liquid chamber with said dividing plate, said predetermined distance being sufficient to provide capillary action in said outer liquid chamber, said outer chamber being in communication with an ink supply source, and spacer means provided in said outer liquid chamber for maintaining the axial dimension of said outer liquid chamber substantially equal to said predetermined distance, said spacer means extending radially within the outer chamber.

4,358,782

SEMICONDUCTOR DEVICE

Kaoru Takasuka; Tatsumi Arakawa; Fumio Matushita, and Hidehiko Kobayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Jan. 17, 1980, Ser. No. 113,043
Int. Cl.³ H01L *45/00*
U.S. Cl. 357—2 6 Claims



1. A semiconductor device which comprises:
an electrically conductive substrate;
an amorphous silicon hydride layer having a thickness of 0.1 to 5 μm on said substrate;
an oxide semiconductor layer having a thickness of 50 to 500

Å on a surface of said amorphous silicon hydride layer opposite said substrate; and

a metallic layer having a thickness of 50 to 200 Å on a surface of said oxide semiconductor layer opposite said amorphous silicon hydride layer.

4,358,783

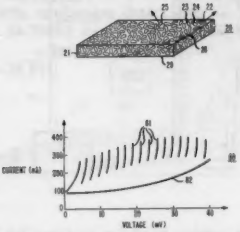
SUPERCONDUCTING THIN FILMS

Arthur F. Hebard, Bernardsville, and Joanna M. Vandenberg, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 30, 1980, Ser. No. 192,371

Int. Cl.³ H01L *39/22*

U.S. Cl. 357—5 **30 Claims**



1. A superconducting device including:

a thin superconducting film; and

means for applying an electric current to said film;

said film comprising;

irregularly shaped small metal grains having a plurality of orientations; and

an insulating matrix, in which said grains are interspersed, comprising at least one oxide of said metal;

whereby said film is hillock-resistant when subjected to thermal cycling.

4,358,784

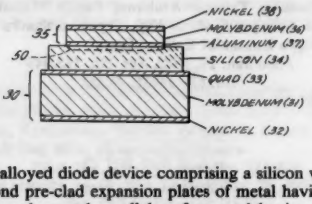
CLAD MOLYBDENUM DISKS FOR ALLOYED DIODE

Joseph Wislocky, El Segundo, and Thomas J. Roach, Rancho Palos Verdes, both of Calif., assignors to International Rectifier Corporation, Los Angeles, Calif.

Filed Nov. 30, 1979, Ser. No. 98,850

Int. Cl.³ H01L *23/48, 29/46, 29/54*

U.S. Cl. 357—71 **6 Claims**



1. An alloyed diode device comprising a silicon water; first and second pre-clad expansion plates of metal having respective first and second parallel surfaces and having respective coefficients of expansion similar to that of said silicon; said first expansion plate having first and second solder foils pre-clad thereto and extending over the full areas of said first and second surfaces respectively of said first expansion plate; said second expansion plate having a third solder foil pre-clad to said first surface thereof and a fourth foil of a predetermined impurity type for producing a rectifying junction in said silicon wafer pre-clad to said second surface of said second plate; said third and fourth foils extending over the full areas of said first and second surfaces respectively of said second expansion plate; said silicon wafer disposed between said first and second pre-clad expansion plates; said first solder foil of said first expansion plate soldering said first expansion plate to one surface of said silicon wafer; said fourth foil being alloyed into the opposite surface of said silicon wafer.

4,358,785

COMPRESSION TYPE SEMICONDUCTOR DEVICE

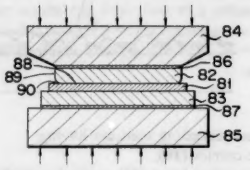
Katsuhiko Takigami, and Makoto Azuma, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 4, 1980, Ser. No. 127,092

Claims priority, application Japan, Mar. 13, 1979, 54-28286

Int. Cl.³ H01L *23/42*

U.S. Cl. 357—79 **11 Claims**



1. A compression type semiconductor device, comprising:

a semiconductor element;

at least one metal plate having substantially upright edge surfaces, a planar contacting surface engaging a first surface of the semiconductor element, and a continuous curved surface interconnecting said edge surfaces and said contacting surface, wherein at each point on the periphery of said contacting surface at least one plane normal to said contacting surface intersects said curved surface in an arcuate curve which tangentially joins said contacting surface; and

compression means including a metal stamp for pressing said contacting surface of said metal plate against said first suface of said semiconductor element;

wherein the metal plate has a thermal expansion coefficient intermediate those of the semiconductor element and the metal stamp.

4,358,786

METHOD AND A CIRCUIT ARRANGEMENT FOR THE STORAGE OF VIDEO SIGNALS

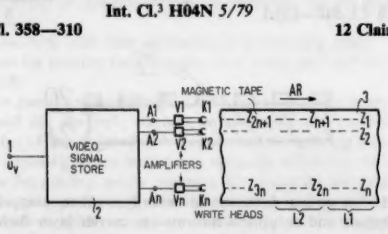
Hans-Joerg Pfleiderer, Zorneding; Karl-Ulrich Stein, Munich; Michael Koubek, Munich, and Hans-Martin Christiansen, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 57,128

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1978, 2835130

Int. Cl.³ H04N *5/79*

U.S. Cl. 358—310 **12 Claims**



11. A method of recording and reproducing video signals onto and from, respectively, a constantly moving recording tape, comprising the steps of:

dividing television image line signals into a plurality of groups, each of said groups covering a horizontal strip-shaped area of the television image and in which the line signals are selected such that predetermined last lines of a group are equal to the same predetermined first lines of the adjacent group;

intermediately storing the line signals of each of said groups;

recording the stored line signals of a group simultaneously on the recording tape, group-by-group;

reading the recorded line signals from the recording tape each line in parallel with each of said groups read in series;

intermediately storing the simultaneously recorded read line signals of all lines in respective line memories, group-by-group;

reading the stored line signals from the line memories with the lines of each group read in series and the reading of the groups being temporally adapted so that the predetermined last and first lines of adjacent groups are simultaneously output; and

forming the mean value for corresponding ones of said predetermined last and first lines of adjacent groups.

4,358,787

DIGITAL PROCESS FOR CONTROLLING THE CORRECT REPRODUCTION OF A COMPOSITE TELEVISION SIGNAL AND A DEVICE FOR IMPLEMENTING SAID PROCESS

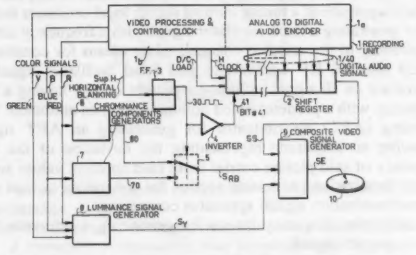
Pierre Oprandi, and Rene Romeas, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed May 28, 1980, Ser. No. 153,854

Claims priority, application France, May 31, 1979, 79 13980

Int. Cl.³ H04N *9/40, 5/76*

U.S. Cl. 358—14 **9 Claims**



1. A digital process for checking the correct reproduction of a composite television signal transmitted or recorded on an information-carrying medium at the timing of the scanner of the lines of an image, comprising the steps of:

inserting at least binary-coded pulse signals during the recording or transmission of said composite signal at a predetermined time during the return intervals of said line scanning wherein the succession of logical values assumed by said signal determines a pre-established sequence of binary states to be checked;

detecting said succession of values during the reproduction of said composite signals;

correlating said detecting values with said pre-established sequence of binary states to be checked so that said sequence is dependent upon said succession of values; and

modifying said correlation so that the dependency of said sequence upon said succession of values is insensitive to consecutive alternations of said pre-established sequence less in number than a predetermined threshold number.

4,358,788

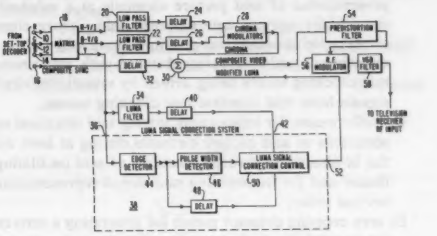
LEGIBILITY FOR ALPHA-MOSAIC CHARACTERS

Sherwin D. Burrowes, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,838

Int. Cl.³ H04N *9/535, 5/14;* G09G *1/16, 1/28*

U.S. Cl. 358—22 **14 Claims**



1. A method for increasing the contrast of a quantized pulsatory video signal, said method comprising determining if the width of a pulse within said video signal is less than a predetermined duration, and modifying said video signal to increase the absolute value of the difference of a level of said video signal with respect to the preceding signal level of the modified signal when said pulse width is less than said predetermined duration and if said absolute value is less than a selected amount.

4,358,789

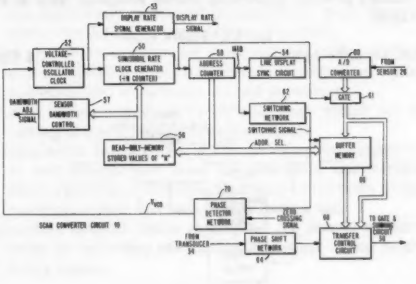
DIGITAL SCAN CONVERTER FOR IMAGE SCANNING AND DISPLAY SYSTEM

Charles L. Confer, Arlington, Mass., assignor to Inframetrics, Inc., Bedford, Mass.

Filed Jun. 1, 1981, Ser. No. 269,426

Int. Cl.³ H04N *5/02*

U.S. Cl. 358—140 **12 Claims**



1. In an imaging system for producing an image of an object wherein the imaging system includes:

A. scanning means including at least one oscillating reflector positioned in an optical path between said object and an image field thereof for scanning the object along a bi-directional path at a sinusoidally varying speed,

B. sensor means positioned in the image field derived from said object for measuring the radiance level of picture elements transferred thereto by said scanning means and for generating electrical representations of the picture elements, and

C. display means having a constant rate scanned display monitor for receiving the electrical representations of the picture elements from said sensor means,

an improved scan converter circuit for converting bi-directionally, sinusoidally rate generated representations of the picture

elements into unidirectional, constant rate generated representations of the picture elements to be displayed in said display device, wherein the improvement comprises:

A. constant rate clocking means for generating constant rate digital clocking signals coincident with the rate of display of picture elements displayed by said display device,

B. sinusoidal rate clocking means for generating a sampling signal that enables said sensor means to produce electrical presentations of said picture elements at a substantially sinusoidally varying rate whereby said picture elements are sampled at equidistant positions along said path in each direction of said bi-directional sweep path, said sinusoidal rate clocking means being driven by said digital clocking signals from said constant rate clocking means,

C. buffer means for temporarily storing said electrical representations of said picture elements during at least one of the bi-directional sweep directions of said oscillating reflector and for transmitting said stored representations in reverse order,

D. zero crossing detector means for generating a zero crossing signal that indicates the zero crossings of said oscillating reflector about its center of oscillation,

E. phase lock means for maintaining phase coherence between the periodic rate of change of said sampling signal from said sinusoidal rate clocking means and the occurrences of said zero crossing signal, and

F. transfer means for alternately transferring said electrical representations of picture elements from said buffer means and said sensor means to said display device under control of said constant rate clocking means so that the positions of the picture elements of the object bear a one-to-one correspondence to the positions of picture elements displayed by said display means.

4,358,790

ELECTRICAL DATA PULSE SLICING

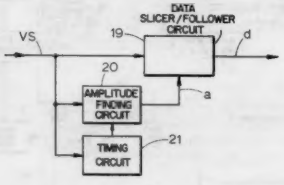
Christopher P. Summers, London, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,517

Claims priority, application United Kingdom, May 4, 1979, 7915682

Int. Cl.³ H04N *7/08*

U.S. Cl. 358—147 **8 Claims**



1. A method of slicing data in the form of a bi-amplitude data pulse signal comprising a sequence of clock pulses followed by a sequence of data pulses, which method comprises the steps of:

determining a data slicing level which is nominally at the absolute mean amplitude for a received data pulse signal;

producing, in response to a received data pulse signal, a sliced data pulse signal in accordance with said data slicing level;

determining the actual mean amplitude of at least part of a sequence of clock pulses in said received data pulse signal;

comparing said actual mean amplitude with one of the two subsisting amplitudes of the received data pulse signal to produce an amplitude correction factor proportional to the difference;

multiplying said sliced data pulse signal by said amplitude correction factor to produce a modified sliced data pulse signal; and

comparing, continually during the sequence of data pulses, the amplitude of said received data pulse signal with that of said modified sliced data pulse signal for forming a level correction signal for adapting said data slicing level to the actual absolute mean amplitude of said received data pulse signal.

4,358,791

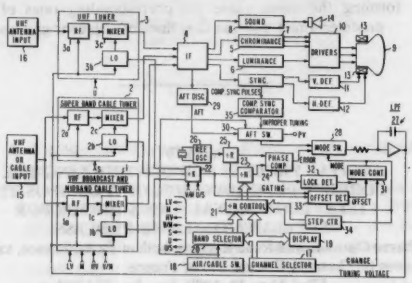
PHASE LOCKED LOOP TUNING CONTROL SYSTEM INCLUDING A SYNC ACTIVATED AFT SIGNAL SEEKING ARRANGEMENT

Michael P. French, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 1, 1980, Ser. No. 211,704

Int. Cl.³ H04N *5/50*

U.S. Cl. 358—193.1 **10 Claims**



1. In a multiband television receiver including channel selection means for selecting channels; RF means for selecting an RF carrier corresponding to a selected channel in response to the magnitude of a tuning control signal; local oscillator means for generating a local oscillator signal with a frequency corresponding to the selected channel; mixer means for combining said selected RF carrier and said local oscillator signal to produce an IF signal including a picture carrier having a frequency with a predetermined nominal value; an automatic fine tuning (AFT) discriminator for generating an AFT signal having an amplitude representing the deviation of the frequency of said picture carrier from said nominal value; and a synchronization processing section for generating at least one synchronization signal; apparatus comprising:

reference frequency means for generating a reference frequency signal;

comparison means for generating an error signal representing the phase and/or frequency deviation between said local oscillator signal and a comparison signal having a frequency substantially equal to the product of a programmable factor and the frequency of said reference signal;

programmable factor control means for controlling the programmable factor, said programmable factor control means setting said programmable factor in response to the channel number of the selected channel when a new channel is selected;

lock detector means for determining when said error signal has a predetermined condition;

tuning signal generating means for generating said tuning signal in response to one of said error and AFT signals;

mode selection means for selectively coupling one of said AFT signal and said error signal to said tuning signal generating means, said mode selection means being responsive to said channel selection means for coupling said error signal to said tuning control means when said channel is changed and being responsive to said lock detector means to couple said AFT signal to said tuning signal

generating means when said error signal has said predetermined condition;

offset detector means for determining when said local oscillator signal has a predetermined frequency offset from the frequency established when said error signal was coupled to said tuning signal generating means after said AFT signal is coupled to said tuning signal generating means;

said mode selection means being responsive to said offset detector means for coupling said error signal to said tuning signal generating means when said local oscillator signal has said predetermined frequency offset;

said programmable factor control means being responsive to said offset detector means for changing said programmable factor by a predetermined increment when said local oscillator signal has said predetermined frequency offset;

synchronization detector means for determining when said synchronization signal has a predetermined condition; and

AFT control means responsive to said sync detector means for decoupling said AFT signal from said tuning signal generating means and instead coupling a predetermined level selected to cause said local oscillator signal to have said predetermined value to said tuning signal generating means when said synchronization signal has said predetermined condition.

4,358,792

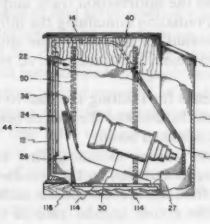
PRECISION SCREEN ELEVATING AND CONTROL MEANS FOR A PROJECTION TELEVISION RECEIVER

James D. Domoleczny, Vernon Hills; Raymond D. Y. Loh, Skokie; Hans E. Manske, Addison; Joseph N. Marchese, Norridge, and Carl A. Michelotti, Barrington, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 17, 1981, Ser. No. 235,059

Int. Cl.³ H04N *5/64*

U.S. Cl. 358—254 **6 Claims**



1. In an ultra-compact projection television receiver, the combination comprising:

cabinet means for enclosing receiver components including a vertically reciprocable rear projection viewing screen selectively storable therein;

precision elevating means for raising and lowering said screen between a lowered, receiver-inoperable position wherein said screen is stored in said cabinet, and a raised, receiver-operable viewing position wherein said screen is emerged from said cabinet;

a television system having an ON control mode for providing television sound and television pictures for display on said screen when said screen is emerged, and an OFF control mode for turning off said sound and pictures;

control means coupled to said elevating means and said television system for sensing the position of said screen in its reciprocation and obstructions to said reciprocation manifested by increased resistance to said reciprocation, and correlatively controlling said elevating means and the OFF/ON control modes of said television system in response thereto; said control means being programmed to cause said screen to rise smoothly to its raised position without an abrupt stop, and such that pictures appear and sound is heard when the raised position is attained, safety is enhanced as obstructions to screen reciprocation are sensed and said reciprocation is stopped, and such that the receiver is caused to automatically place the television system in the OFF mode when the screen is stored.

4,358,793

BEAM SCANNING COPYING APPARATUS

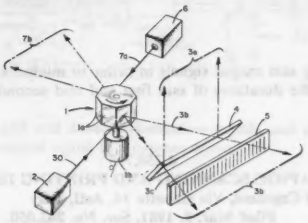
Yasuo Hosaka, Tokyo, and Masasumi Yana, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 10, 1980, Ser. No. 205,166

Claims priority, application Japan, Nov. 13, 1979, 54/14607

Int. Cl.³ G03G *15/28*; H04N *1/30, 1/04*

U.S. Cl. 358—286 **18 Claims**



1. A beam scanning copying apparatus comprising:

light generating means for generating a first and second laser beam;

modulator means for modulating said second laser beam in accordance with modulating signals;

light deflecting means having at least a first and second reflecting face for deflecting said first and second laser beam within predetermined angular ranges, said first face reflecting the light from said first laser beam to produce a first reflected beam and said second face reflecting the light from said modulator means to produce a second reflected beam;

a light splitter for splitting the first reflected beam into a first and second split beam, said first split beam being directed onto a document for scanning the document;

first photoelectric means for detecting light reflected from said document and for converting it into electrical signals corresponding to an image on said document;

storage means responsive to variable clock signals for receiving and storing said electrical signals;

timing means coupled to said storage means and responsive to said second split beam for generating said variable clock signals for controlling the timing of the entry of said electrical signals into said storage means; and,

recording medium means scanned by the second reflected beam for recording information according to said modulating signals.

4,358,794

FACSIMILE AND SIMILAR APPARATUS EMPLOYING A PLURALITY OF SOLID-STATE IMAGE SCANNERS

Naoki Kurakami; Tetsuya Takahashi, and Etsuo Suzuki, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 176,804

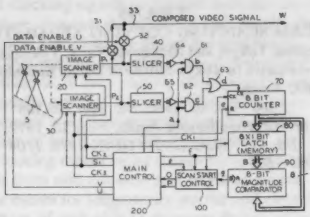
Claims priority, application Japan, Aug. 15, 1979, 54-104251

Int. Cl.³ H04N *1/10, 1/38, 1/40*

U.S. Cl. 358—293 **11 Claims**

1. A facsimile scanner comprising first and second image area scanner means for scanning an image area with an overlapped scan region to produce first and second analogue output signals, respectively, with first and second distinctive signals of a common duration included in said first and said second output signals, respectively, when said overlapped scan region

includes a marker means for performing a logical sum of the durations of said first and second distinctive signals, and means responsive to said first and second distinctive signals for



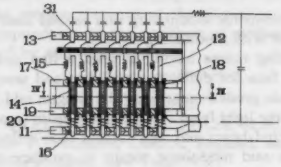
adjusting said output signals in order to minimize the logical sum of the durations of said first and said second distinctive signals.

4,358,795

GRAPHIC SCANNING AND PRINTING DEVICE

Giovanni Cagnasso, Via Gabotto 14, Asti, Italy

Filed Mar. 9, 1981, Ser. No. 242,050
Claims priority, application Italy, Mar. 12, 1980, 1702 A/80
Int. Cl.³ H04N *1/24*
U.S. Cl. 358—295 **3 Claims**



1. A graphic scanning and printing device comprising

a scanning element having a plurality of metal bars arranged for vertical sliding movement in series inclined at about 10° in holes in a horizontal retaining member and slidable through holes in a coextensive graphite plate into engagement with a graphic sign to be reproduced, said graphic sign being written in electrically conductive ink to make electrical contact with said metal bars when contacted thereby;

means including microcontacts arranged above and coextensive with said horizontal retaining member;

means for making electrical contact between said vertically slidable metal bars and said microcontacts during vertical upward movement of said metal bars;

a printing element having microcontacts electrically connected to said microcontacts of said scanning element and including a plurality of solenoids each having a vertically movable core bar, said solenoids corresponding in number and arrangement to said vertically movable metal bars of said scanning element, said solenoids being mounted in a pair of parallel horizontal frame members;

a horizontal guide member arranged below and coextensive with said frame members;

resilient means between said horizontal guide member and said vertically movable solenoid core bars to normally hold the latter in a retracted position from a sheet of printing paper adapted to be placed below said horizontal guide member with the interposition of copying sheet material;

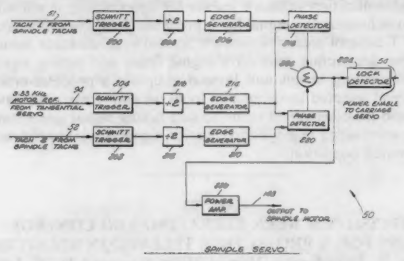
said solenoid core bars, when energized by contact of said vertically slidable metal bars of said scanning element with said electrically conductive graphic sign to be reproduced, being arranged to move toward said printing paper to trace a dot thereon, the plurality of dots thus produced by said plurality of solenoid core bars forming an exact reproduction of said graphic sign.

4,358,796

SPINDLE SERVO SYSTEM FOR VIDEODISC PLAYER

Ludwig Ceshkovsky, Fountain Valley, and Wayne R. Dakin, Redondo Beach, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 890,670, Mar. 27, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 130,901
Int. Cl.³ H04N *5/76*; G11B *17/00*
U.S. Cl. 358—322 **7 Claims**



1. A spindle servo system for use in an apparatus for recovering an information signal from an information track arranged on an information bearing surface of a disc, wherein the information signal includes a signal defining a time base, and the apparatus includes optical system means for directing a source beam of radiation to the information track and for directing a modulated beam of radiation containing the information signal to signal recovery means for recovering the information signal from the modulated beam, the spindle servo system comprising:

spindle motor means for rotating the disc to impart relative motion between the disc and the source beam and thereby produce the modulated beam;

spindle tachometer means including first and second tachometer elements coupled to the spindle motor means, for producing first and second spindle tachometer signals indicative of the actual angular rate of rotation of the spindle motor means;

spindle reference signal means for producing a spindle reference signal representing a desired angular rate of rotation of the spindle motor means;

means for comparing each of the first and second spindle tachometer signals with the spindle reference signal, to produce first and second error signals representative of the detected differences therebetween; and

means for summing together the first and second error signals to produce a spindle motor control signal for coupling to the spindle motor means, to produce the desired angular rate of rotation.

4,358,797

ELECTRONIC EDITING CONTROL APPARATUS FOR A VIDEO TAPE RECORDER

Hideo Nishijima; Isao Fukushima, and Hajime Yokota, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

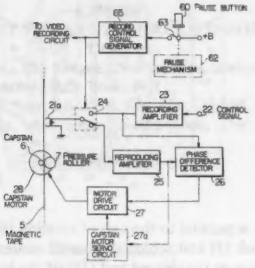
Filed Feb. 22, 1980, Ser. No. 123,644
Claims priority, application Japan, Feb. 23, 1979, 54-19786
Int. Cl.³ H04N *5/78*; G11B *27/08*
U.S. Cl. 360—14.2 **2 Claims**

1. An electronic editing control apparatus for use with a video signal recording and reproducing apparatus of the type including a capstan motor, servo control means for producing a servo control signal to control said capstan motor and effect driving of a magnetic tape, pause means responsive to a pause

instruction issued during a signal recording operation for stopping the recording operation and holding the recording and reproducing apparatus in a pause state for a reproducing operation including rewinding a predetermined length of the magnetic tape, and means responsive to removal of said pause instruction for effecting playback of said rewound tape to reproduce a first control signal therefrom, the editing control apparatus comprising:

means for comparing the phase of said first control signal and that of a second signal of a signal to be recorded subsequent to said pause instruction to produce a phase difference signal therebetween;

means for producing a pulse current signal having a polarity and a duration corresponding to said phase difference signal;



means for supplying said pulse current signal to said capstan motor in place of said servo control signal only for a time period corresponding to said duration of said phase difference signal for effecting phase-synchronization between said first and second control signals; and

means responsive to said removal of said pause instruction for producing a recording operation re-start signal a predetermined time after said pause instruction removal, the length of said predetermined time being such that said production of said phase difference is carried out before said production of said recording operation re-start signal, whereby a video signal may be recorded in succession to a recorded video signal on the magnetic tape in a phase-synchronized relation therebetween.

4,358,798

SPECIAL EFFECTS SYSTEM

Lee V. Hedlund, Maple Shade, and Richard E. Mathys, Sr., Clementon, both of N.J., assignors to RCA Corporation, New York, N.Y.

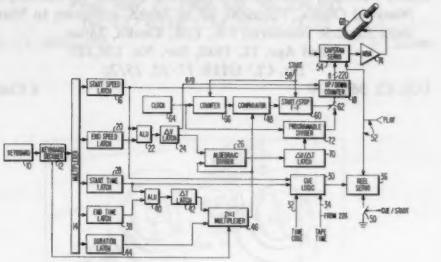
Filed Dec. 5, 1980, Ser. No. 213,219

Claims priority, application United Kingdom, Apr. 10, 1980, 8011864

Int. Cl.³ G11B *15/46*

U.S. Cl. 360—73 **9 Claims**

1. A method for generating speed control signals for a record segment from starting speed and starting time information signals, an ending speed information signal, and a signal indicative of the duration of said segment, said method comprising computing a change in velocity signal for said segment from said starting and ending speed information signals, and computing said speed control signal from said start speed, change



in velocity, and said duration indicative signals, and applying said speed control signal to a capstan servo.

4,358,799

APPARATUS FOR RECORDING AND/OR REPRODUCING SIGNALS

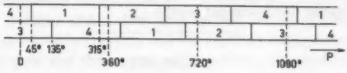
Edmond deNiet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,289

Claims priority, application Netherlands, Jan. 17, 1979, 7900351

Int. Cl.³ G11B *5/52, 15/60*

U.S. Cl. 360—84 **5 Claims**



1. An apparatus for recording and/or reproducing signals on a magnetic tape, said apparatus comprising a generally cylindrical head drum having a circumferential gap disposed in a plane normal to the axis of the drum, a head support mounted inside said drum for rotation about said axis, at least three heads supported on said support for rotation therewith in the plane of said gap, said heads being disposed opposite said gap and uniformly spaced from each other, and means for guiding the magnetic tape along a helical path around said drum over at least

$$\frac{n-1}{n} \times 360°$$

of the circumference of said drum with a pitch such that at least

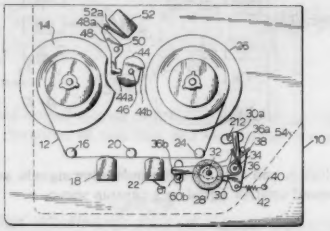
$$\frac{n-1}{n} \times 360°$$

of the gap circumference is covered by said tape, wherein n is the number of heads, so that, upon rotation of said support, successive heads make magnetic contact with said tape through said gap.

4,358,800
OPERATION CONTROL DEVICE FOR TAPE RECORDERS

Ryota Shimizu, Toyonaka; Toshiharu Sasaki, Kawanishi, and Naoyuki Ohara, Yokaichi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 11, 1980, Ser. No. 139,221
Int. Cl.³ G11B *15/32, 15/28*
U.S. Cl. 360—90 **6 Claims**



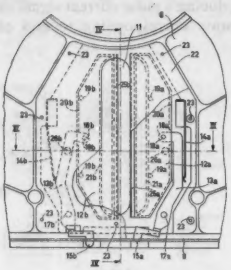
1. An operation control device for a magnetic tape record and/or reproducing apparatus having a tape transport mechanism, said operation control device comprising: a power means; a first displacement means driven by said power means; a second displacement means for shifting said tape transport mechanism of said apparatus into and out of operation; a coupling means for constantly engaging said first displacement means with said second displacement means, said coupling means being positionable between an operative position where said second displacement means is moved in response to the movement of said first displacement means and an inoperative position where said second displacement means remains unmoved in response to the movement of said first displacement means; a control means selectively and operatively activated for engagement with said coupling means for placing said coupling means in said operative position thereof, whereby said tape transport mechanism is shifted into and out of operation in response to the activation of said control means under said constant engagement of said first displacement means with said second displacement means.

4,358,801
DISK UNIT WITH ROTATABLE CIRCULAR INFORMATION DISK

Johannes W. Faber, Eindhoven, and Pieter van der Giessen, The Hague, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,509
Claims priority, application Netherlands, Jul. 31, 1980, 8004378
Int. Cl.³ G11B *23/04*
U.S. Cl. 360—97 **7 Claims**

1. A disk unit (1), comprising:
an information disk (2) which is rotatable about an axis of rotation (4),
an enclosure for the information disk (2) having parallel major walls (5; 6) on both sides of the information disk and having side walls (7; 8), at least one of the two major walls (5; 6) having a slot (10) for an information write and/or read head associated with a disk drive apparatus, which slot extends at least substantially radially relative to the axis of rotation (4) of the information disk (2);
a slot sealing device, comprising at least one sliding plate (*12a*, *12b*), which is at least substantially translatable relative to the enclosure between an open position and a closed position, and at least one actuating member (*13a*, *13b*), which is externally accessible to a disk drive apparatus, is coupled to the sliding plate (*12a*, *12b*), and is movable between a rest position and an operating position in order to move the sliding plate from the closed position to the open position when the actuating member is moved from the rest position to the operating position by a disk drive unit, and
at least one resilient means (*14a*, *14b*) for moving back the sliding plate from the open position to the closed position and for moving back the actuating member, from its operating position to its rest position,
the actuating member comprising at least one lever (13) having first end (15) and a second end (16), the lever being pivotable relative to the enclosure between the rest position and the operating position about a pivoting axis

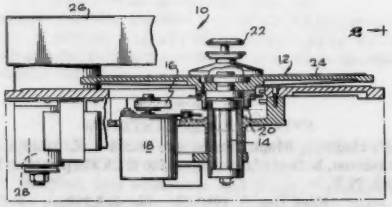


which is parallel to the axis of rotation (4) of the information disk (2) and which is situated nearer to the first end (15) than to the second end (16) of the lever, the first end (15) functioning as a stop for the drive unit and the second end (16) being pivotally connected to the sliding plate (12) so that between the closed position and the open position the sliding plate (12) is pivotable relative to the lever (13) to a limited extent and unimpeded by the enclosure (6), and
the lever (13) and the sliding plate (12) being journalled on the major wall (6) of the enclosure in which the slot (11) is formed.

4,358,802
FLUID CUSHION TURNTABLE FOR VIDEO DISC PLAYER

Manfred H. Jarsen, Encino, Calif., assignor to MCA DiscoVision, Inc., Universal City, Calif.

Filed Oct. 1, 1973, Ser. No. 402,634
Int. Cl.² G11B *5/016, 17/32*
U.S. Cl. 360—99 **11 Claims**



8. A turntable adapted to support and rotate a thin flexible disc having a central aperture comprising:
(a) spindle means adapted to receive the disc central aperture;
(b) holding means mounted on said spindle for clamping the disc for rotation with said spindle means; and,
(c) disc support means connected to and concentric with said spindle means, including an annular land portion

surrounding said spindle means for supporting the central portion of the disc;

said disc support means further including an outer portion adjacent said annular land portion extending radially outwardly from and non-coplanar with said annular land portion, whereby a disc clamped to said turntable overlies said annular land portion and some of said outer portion and is normally in surface contact with the turntable in the annular land portion only, and is spaced away from the remainder of said disc support means surface;

and conduit means including at least one aperture through said disc support means for supplying fluid to the area between the disc support means and the flexible whereby said disc support means, in rotation, draws fluid into the area between the disc support means and the flexible disc.

4,358,803

ARRANGEMENT FOR CENTERING AN INFORMATION DISC

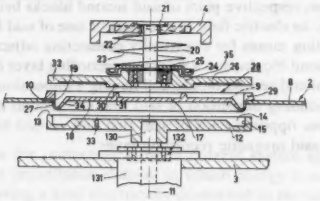
Van Der Giessen, The Hague, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,804

Claims priority, application Netherlands, Dec. 10, 1979, 7908859

Int. Cl.³ G11B *25/04*

U.S. Cl. 360—99 **16 Claims**



1. An arrangement for centering, and writing and/or reading information on, interchangeable information discs comprising a carrier having a central opening defined by an inner wall, said arrangement comprising:

a drive unit including a turntable rotatable about an axis of rotation, said turntable having a supporting surface on one end for an information disc, said supporting surface having a recess formed therein defined by an inner wall which is coaxial with the axis of rotation;

at least one said information disc;

a centering element arranged for rotation with said information disc when said disc is placed into the drive unit, said element including a central portion, elastic portions extending at least substantially radially and, near the ends of said elastic portions, transverse portions adapted for engagement both with the inner wall of the central opening of the information disc and the inner wall of the recess in the turntable, for centering the disc on the turntable upon elastic axial displacement of said central portion; and

displacement means in the drive unit for axially displacing said central portion;

characterized in that said carrier is substantially rigid,

said inner wall of the carrier has an accurate finish, and

said arrangement includes integrally constructed elastically deformable compensation means for compensating for differences in diameter between said inner walls, said elastically deformable compensating means being biased radially outwardly to exert substantially uniform pressure throughout said inner walls in response to axial displacement of said central portion, said centering element engaging at least one of said inner walls via said elastically deformable means.

4,358,804

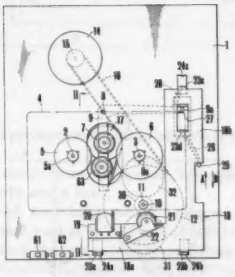
CONTROLLABLE DRIVE FOR TAPE RECORDER

Zenshiro Uehara, Tokyo, Japan, assignor to Tokyo Rokuon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1980, Ser. No. 134,537

Int. Cl.³ G11B *5/54, 21/22, 15/30*

U.S. Cl. 360—105 **5 Claims**



1. A controllable drive assembly for a tape recorder having a chassis, a tape head and a base plate movable on said chassis for moving said tape head, said drive assembly comprising: a drive gear; a motor for driving the drive gear; a toothed wheel which is mounted for rotation and including a first and second toothed portion and a first and second hiatus portion, the toothed portions being disposed for meshing engagement with the drive gear and the hiatus portions being disposed between the toothed portions and being arranged such that the wheel is disengaged from the drive gear when the hiatus portions are adjacent to the drive gear; a cam surface associated with the toothed wheel; a link disposed for angular movement and angularly driven by the cam; means for urging the link against the cam, said urging means coupled to said link and said base plate; a locking mechanism which is operative to lock the toothed wheel in a first position whereat one of the hiatus portions is adjacent the drive gear and in a second position whereat the other hiatus portion is adjacent the drive gear, the first toothed portion being effective for rotating the wheel, upon being unlocked, from its second position to its first position by the drive gear and motor; the cam surface, link and urging means cooperating to rotate the wheel from its first position and toward its second position, the hiatus portions associated with the first position extending beyond the first position and a majority of the distance to the second position such that the toothed wheel freely rotates during this distance upon being unlocked, the second toothed portion providing means for stopping the free rotation of the toothed wheel and reengaging the toothed wheel such that it is driven to the second position under the power of the motor, whereby the operation of said locking mechanism permits said toothed wheel to rotate between its locked positions thereby angularly moving said link so as to reciprocate said base plate on said chassis.

4,358,805

PLAYBACK AND/OR RECORDING DEVICE FOR MAGNETIC RECORDING MEDIA, ESPECIALLY STILL PHOTOGRAPHS PROVIDED WITH A MAGNETIZABLE COATING

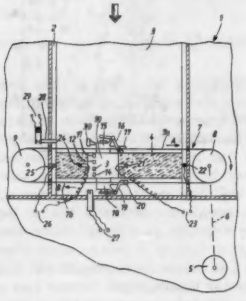
Otto Stemme, Munich; Frank Staudacher, Haan; Peter Lermann, Westerham; Eduard Wagensonner, Aschheim, and Karl-Heinz Schultheiss, Taufkirchen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,115

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840052

Int. Cl.³ G11B *5/55, 15/12*

U.S. Cl. 360—106 6 Claims



1. A device for recording information onto a magnetic recording medium and/or reproducing recorded information therefrom, the device comprising holding means for holding the magnetic recording medium; a movably mounted head unit for tracking tracks on the magnetic recording medium, including a plurality of magnetic heads located to track respective ones of such tracks; a rotary prime mover rotating in a single direction; drive means constituted by runs of an endless drive loop driven by the rotary prime mover in a single direction and travelling in opposite respective directions; coupling means activatable for coupling the head unit alternatively to one or another of said runs of said endless drive loop so that the head unit be moved in one or the opposite direction; control circuit means electrically connected to the coupling means and to the plurality of magnetic heads, operative for causing the coupling means to alternately couple the head unit to the one and to the other of said runs to effect movement of the head unit in one and then the opposite direction and operative for activating successive ones of the plural magnetic heads in a predetermined sequence during respective movements of the head unit in one and then the opposite direction; the control circuit means including digital counting means operative for counting the number of times the head unit has been coupled to and driven by the one and the other runs, and a plurality of semiconductor switches each connected in circuit with a respective one of the plurality of magnetic heads and a plurality of gates each having an output connected to a respective one of the semiconductor switches for controlling the conduction state thereof, the digital counting means having plural outputs, the gates having inputs connected to differing ones of the outputs of the counting means.

4,358,806

MAGNETIC RECORDING AND REPRODUCING METHOD AND MAGNETIC RECORDING MEDIUM THEREFOR

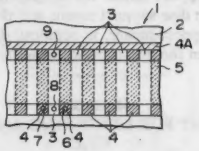
Yoshihiro Arai, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Apr. 23, 1980, Ser. No. 143,110

Claims priority, application Japan, Apr. 27, 1979, 54/52224

Int. Cl.³ G11B *5/25, 5/20*

U.S. Cl. 360—119 4 Claims



1. A magnetic recording means comprising a base made of a non-magnetic material, a plurality of first spaced apart blocks formed of material having a high permeability and arranged in parallel with a predetermined pitch on said base, a plurality of second blocks formed of electrically conductive material interposed between said first blocks so as to alternate therewith on said base, respective pairs of said second blocks being adapted to apply an electric field to a respective one of said first blocks, connecting means for electrically connecting adjacent ones of said second blocks, and a magnetic recording layer disposed on said first and second blocks and having a dimension less than a corresponding dimension of said first and second blocks so as to expose opposite ends of said first and second blocks to be free of said magnetic recording layer.

4,358,807

TAPE CASSETTE

Akira Osanai, and Toshihisa Nakao, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

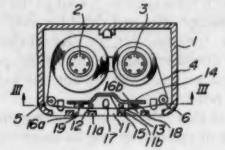
Continuation of Ser. No. 968,741, Dec. 13, 1978, Pat. No. 4,286,300. This application Jul. 11, 1980, Ser. No. 167,425

Claims priority, application Japan, Dec. 13, 1977, 52-167361

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ G11B *15/60, 23/08*

U.S. Cl. 360—130.32 11 Claims



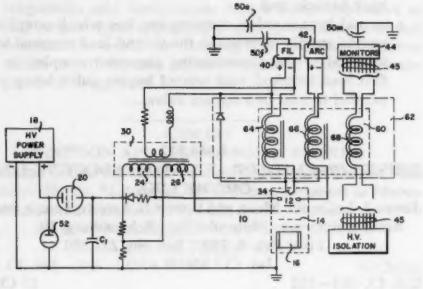
1. A tape cassette, comprising a cassette housing having upper and lower portions and a front edge, a magnetic tape accommodated therein, a pair of openings provided at the front edge of the housing for receiving a magnetic head, an opening for a pinch roller, and a pair of tape press pad springs integrally formed with the cassette housing.

4,358,808

HIGH ENERGY OVERCURRENT PROTECTIVE DEVICE

Walter F. Praeg, Palos Park, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 18, 1981, Ser. No. 264,243
Int. Cl.³ H02H 9/02
U.S. Cl. 361—11 7 Claims



1. A device for protecting a direct current system against discharge of a capacitance element in which energy is stored, the system having a load electrically connected to the capacitance element, said device including an inductor having an inductance, comprising:

a magnetic circuit including a first portion of ferromagnetic material having a first magnetic permeability and a second portion having a second magnetic permeability less than the first magnetic permeability of said first portion;

at least one coil disposed about said first portion of said magnetic circuit electrically connected between said capacitance and said load such that said magnetic circuit is not magnetically excited during first operating conditions of said direct current system;

said coil further connected between said capacitance and said load for conducting a discharge of said capacitance element during second operating conditions of said direct current system that magnetically excites said magnetic circuit setting up a magnetic field in said first portion of said magnetic circuit;

an eddy current shield of electrically conductive material disposed about said first portion of said magnetic circuit, for containing a magnetic field in said first portion of said magnetic circuit;

said inductor and said capacitance element comprising an oscillatory circuit L-C circuit energized by the discharge of said capacitance element;

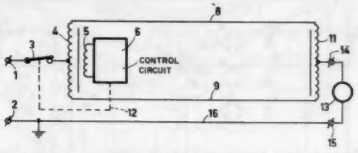
said device further including a diode connected across a first portion of said one coil which conducts current of a first polarity only, said diode conducting a first portion of the energy of a discharge of said capacitance element which is dissipated in said inductor, whereby the first portion of the energy of a discharge of said capacitance element is diverted from the load during second operating conditions of said direct current system.

4,358,809

PERSONAL PROTECTION CIRCUIT

Hulbert Blok, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 11, 1981, Ser. No. 262,283
Claims priority, application Netherlands, May 9, 1980, 8002667
Int. Cl.³ H02H 3/16
U.S. Cl. 361—46 7 Claims



1. A personnel protection circuit in electrical supply systems comprising:

at least two conductors connected between a source of electric power and a load,

normally closed switching means arranged between said source and said load in at least one of said two conductors for maintaining current supply to said load,

control circuit means for opening said switching means upon current unbalance, said control circuit means including a current unbalance detector for detecting said current unbalance, and

at least one further conductor connected in parallel with at least one of said two conductors, said parallel connected conductors being coupled to maintain the same current direction, and said current unbalance detector detecting current unbalance between said parallel connected conductors,

wherein another conductor is provided in parallel with the other of said two conductors to provide second parallel connected conductors, said second parallel connected conductors having their ends coupled together, and wherein a second control circuit means including a second current unbalance detector is provided at initial ends of said second parallel connected conductors toward said source to detect current unbalance between said second parallel connected conductors, said second control circuit means also being coupled to said normally closed switching means,

wherein both said first and second parallel connected conductors toward said load are connected respectively to third and fourth control circuit means, each including a respective third and fourth current unbalance detector, said third and fourth control circuit means being coupled to a short-circuiting means connected across said load, said load being connected between couplings of said first parallel connected conductors and couplings of said second parallel connected conductors.

4,358,810

CIRCUIT BREAKER WITH ALARM

John A. Wafer, Beaver; William E. Beatty, Jr., Beaver Falls, and Alan B. Shimp, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 21, 1981, Ser. No. 226,951
Int. Cl.³ H02H 3/08
U.S. Cl. 361—93 7 Claims

1. A circuit breaker alarm system for a circuit having an interruptable current device, comprising:

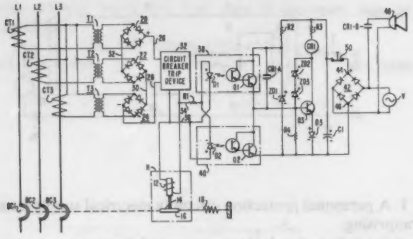
circuit breaker means in series relationship with said circuit having separable contacts for interrupting the flow of current therein;

circuit breaker tripping means attached to said circuit

breaker means adapted to obtain an output voltage upon the tripping of said circuit breaker;

circuit breaker resetting means attached to said circuit breaker means adapted to obtain an output voltage upon the resetting of said circuit breaker;

directional resistive means being connected in parallel with said circuit breaker tripping means and said circuit breaker resetting means to produce a unidirectional current flow upon the tripping or resetting of said circuit breaker means;



current detecting means coupled to said directional resistive means to produce a substantially instantaneous output upon the flow of current in said directional resistive means upon the tripping or resetting of said circuit breaker means; and

alarm means coupled to said current detecting means for energizing an alarm upon the tripping of said circuit breaker.

4,358,811

D-C REGULATOR CIRCUIT

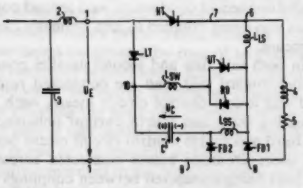
Hans Arremann, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 239,977

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3008907

Int. Cl.³ H02H *1/06*; H02M *3/32*

U.S. Cl. 361—100 **2 Claims**



1. In a d-c regulator circuit for supplying power from a power supply to a load, said regulator having first and second supply terminals for connecting to the power supply and first and second load terminals for connecting to the load, a line coupling the second load terminal to the second supply terminal, comprising:

a controlled main valve coupling the first supply terminal and the first load terminal;

a quenching branch coupled between said first supply terminal and first load terminal in parallel with said main valve and including a controlled commutating valve poled to conduct current in the same direction as said controlled main valve, and a commutating capacitor in series with the commutating valve having a lead coupled to said first load terminal;

a reversing branch coupled in series with said commutating valve and in parallel with said commutating cpacitor and including a controlled reversing valve poled in the forward direction of said commutating valve, and a reversing choke in series with said reversing valve;

a swingbck branch also coupled in series with said commutating valve and in parallel with said commutating capacitor and including a swingback valve poled in opposition to the forward direction of the commutating valve, and a swingback choke in series therewith; and

a first bypass valve coupled across said first and second terminals for conducting load current when the main valve is nonconductive, the improvement comprising;

a further choke coupled in series between said commutating capacitor and said first load terminal and within the part of the quenching branch which is parallel to the swingback branch; and

a second bypass valve coupling the line which couples the second supply terminal to the second load terminal to the terminal of the commutating capacitor coupled to said first load terminal, said second bypass valve being poled parallel to said first bypass valve.

4,358,812

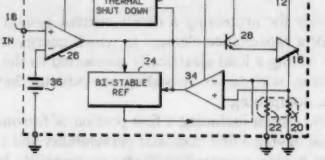
DRIVER CIRCUIT FOR USE WITH INDUCTIVE LOADS OR THE LIKE

James J. LoCascio, Mesa, and Robert B. Jarrett, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 4, 1981, Ser. No. 231,550

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—152 **17 Claims**



1. Circuit for providing current to a load, comprising:

power stage means coupled to the load including current sensing means for sensing the magnitude of the load current;

comparator means having first and second inputs and outputs, said first input receiving a reference signal, said second input being coupled to said current sensing means, said first output being coupled to said power stage means said comparator means being responsive to said reference signal being of a first predetermined magnitude for rendering said power stage means conducting such that current is supplied to the load, said comparator being responsive to the load current reaching a peak magnitude for providing output signals at said first and second outputs such that said power stage means is rendered less conducting whereby the magnitude of load current abruptly decreases;

bistable reference means being coupled to said second output of said comparator means and being responsive to an applied input signal for providing said reference signal, said bistable reference means being responsive to said output signal appearing at said second output of said comparator means for providing a reference signal of a second predetermined magnitude such that the load current is caused to be decreased to a level representative of said second predetermined magnitude of said reference signal;

input circuit means adapted to receive said input signal for producing a first output signal at first and second outputs

when said input signal is in a first level state and for producing a second output signal when said input signal is in a second level state, said first output being coupled to said power stage means such that said first output signal inhibits said power stage means from being rendered conducting; and

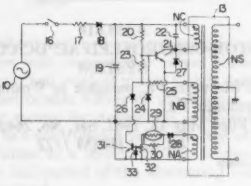
latch circuit means having first and second inputs and an output, said first input being coupled to said second output of said input circuit means, said second input being coupled to said second output of said comparator means, said output being coupled to an input of said bistable reference means, said latch circuit means being responsive to said first output signal from said input circuit means for maintaining said bistable reference means in a first state for supplying said reference signal of a first predetermined magnitude, said latch circuit means being responsive to said output signal appearing at said second output of said comparator means for causing said bistable reference means to provide said reference signal of a second predetermined magnitude.

4,358,813

IGNITION APPARATUS FOR A BURNER

Munekazu Sato, Hirakata; Muneo Nishimura, Katano, and Taichi Harada, Matsuzaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 20, 1980, Ser. No. 208,649
Int. Cl.³ F23Q 3/00
U.S. Cl. 361—263 **8 Claims**



1. An ignition apparatus for a burner comprising:

a rectifying circuit connected to an ac power source;

a blocking oscillator circuit connected to receive a rectified output from said rectifying circuit, said oscillator circuit including an oscillation transistor, and a collector winding and a base winding which are provided on the primary side of a high voltage transformer; and

a control circuit including a control winding provided on the primary side of said transformer, said control circuit being connected between a base and an emitter of said oscillation transistor to control a base current thereof in response to a variation in an output voltage of said control winding caused by a variation in a collector voltage of said oscillation transistor thereby maintaining the collector voltage of said oscillation transistor substantially constant irrespective of variations in an input voltage applied to said oscillation circuit and a load applied to an output winding provided on the secondary side of said transformer, whereby a stabilized high-voltage for ignition is obtained from said output winding of said transformer.

4,358,814

CAPACITIVE PRESSURE SENSOR

Shih-Ying Lee, Lincoln, and Dennis K. Briefer, Berlin, both of Mass., assignors to Setra Systems, Inc., Natick, Mass.

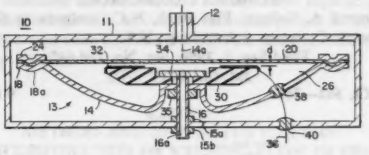
Filed Oct. 27, 1980, Ser. No. 200,788
Int. Cl.³ H01G 7/00
U.S. Cl. 361—283 **35 Claims**

1. A capacitive pressure sensor comprising:

A. a diaphragm having an electrically conductive central portion,

B. a rigid concave base member extending about a first central axis, and having rim lying in a first plane, said first plane being perpendicular to said central axis, said base member including a flange extending from its rim,

C. means for securing the periphery of said diaphragm to said flange whereby said diaphragm periphery lies substantially in said plane,



D. base support member extending along said central axis through and coupled to the center of said base member substantially at said center axis,

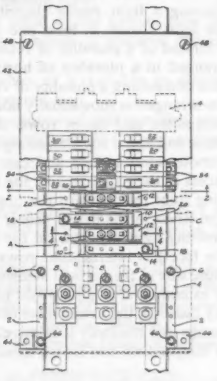
E. first electrode fixedly coupled to said base support member and including a substantially planar conductive surface substantially parallel to and separated by a gap, d, from said diaphragm.

4,358,815

PANELBOARD FOR BOLT-IN AND PLUG-IN CIRCUIT BREAKERS

Howard E. Koslosky, Whitefish Bay, and Tustin C. Reetz, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 36,235, May 4, 1979, abandoned. This application Feb. 11, 1981, Ser. No. 233,357
Int. Cl.³ H02B 1/20
U.S. Cl. 361—355 **10 Claims**



1. In an electrical panelboard including a bus bar and adapted to receive both plug-in and bolt-in circuit breakers, a branch circuit connector comprising:

a rigid flat strip of conductive material secured at one end to said bus bar and extending transversely from said bus bar in a plane parallel to the flat plane of said bus bar, said strip having a length greater than its width in said plane parallel to the flat plane of said bus bar and extending from said bus bar in its lengthwise dimension;

means spaced longitudinally along the lengthwise dimension of said strip for securing the line side terminal of a respective bolt-in circuit breaker; and

raised portions for individually receiving the line side terminal of a respective plug-in circuit breaker, said raised

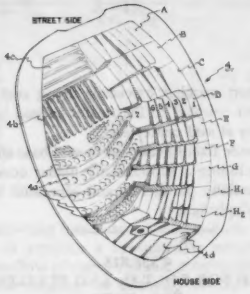
portions being intermediate the lateral edges defining the narrow width of said strip and individually longitudinally spaced along the lengthwise dimension of said strip on longitudinally opposite sides of said means.

4,358,816

ROADWAY LUMINAIRE

Trasimond A. Soileau, Flat Rock, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 5, 1980, Ser. No. 184,649
Int. Cl.³ F21V 7/00
U.S. Cl. 362—346 **9 Claims**



1. A luminaire adapted to be mounted at the side of a roadway for relatively uniformly illuminating the remote, intermediate and near portions of the roadway surface comprising, in combination, a generally ovate concave reflector having curved side walls extending between the street side and the house side of the reflector and a rim defining a bottom opening, said reflector having a light center therein, a light source arranged at said light center, at least one side wall of said reflector being formed of a plurality of reflecting facets, said facets being arranged in a plurality of horizontally adjacent panels, each panel comprising a plurality of vertically adjacent facets, said facets arranged in substantially horizontally extending lower, intermediate and upper rows, the facets in said lower, intermediate and upper rows directing light rays respectively to the remote, intermediate and near portions of the roadway, the facets in the panels nearer the house side of the reflector directing light rays toward the opposite side of the roadway, and the facets in the panels nearer the street side of the reflector directing light rays toward the luminaire side of the roadway, the facets in intermediate rows of a plurality of panels on the house side of the vertical median transverse plane of said reflector extending at angles to said plane less than the angles formed by facets in the lower rows of the same respective panels, whereby the roadway is relatively uniformly illuminated in both longitudinal and lateral directions.

4,358,817

VERTICALLY ADJUSTABLE DEVICE FOR SUSPENDING A FRAME PROVIDED WITH LIGHTING, WITH RADIATORS OR THE LIKE

Hans Bielemeier, Bielefeld, Fed. Rep. of Germany, assignor to Lohmann-Werke GmbH & Co. KG, Bielefeld, Fed. Rep. of Germany

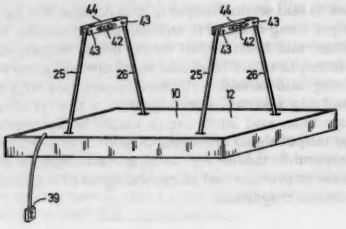
Filed Jun. 27, 1980, Ser. No. 163,826
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 7918876[U]
Int. Cl.³ B60Q 1/06
U.S. Cl. 362—386 **9 Claims**

1. A height adjustable suspension for supporting a fixture frame from an overhead location, said frame having a length dimension, comprising

(a) a winding shaft rotatably supported in said frame; said winding shaft having an axis extending parallel to said length dimension;

(b) a motor supported in said frame and operatively fixedly connected with said winding shaft;

(c) a plurality of longitudinally spaced winding drums mounted on said winding shaft for rotation therewith; and



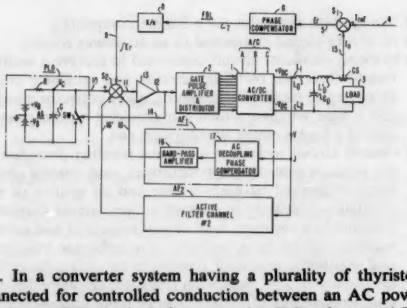
(d) separate suspension cables associated with each said winding drum; each cable being mounted on said overhead location and having an end directly affixed to the respective said drum; the course of each cable from said overhead location to the respective said winding drum being, at all points of the cable, perpendicular to said length dimension.

4,358,818

THYRISTOR-CONTROLLED AC/DC CONVERTER SYSTEM

John Rosa, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 18, 1981, Ser. No. 264,871
Int. Cl.³ H02M 1/12
U.S. Cl. 363—46 **7 Claims**



1. In a converter system having a plurality of thyristors connected for controlled conduction between an AC power supply and DC terminals for outputting DC voltage and DC current, the combination of:

control means responsive to the output of said DC terminals for establishing a firing angle for said thyristors in accordance with a desired DC output;

feedback means responsive to undesired harmonic contents of said DC output for modifying the operation of said control means in magnitude and phase to compensate for such undesired harmonic content between said DC terminals; said feedback means including a plurality of band-pass amplifiers each tuned to the frequency of an undesired harmonic component in said output DC voltage; and

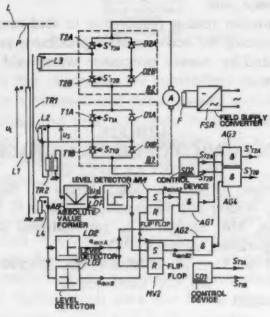
summing means responsive to each of said band-pass amplifiers for concurrently modifying the operation of said control means in magnitude and phase in accordance with the magnitude and frequency of a corresponding one of said plurality of undesired harmonic components existing in

said output DC voltage; thereby to provide harmonic reduction.

4,358,819
ELECTRICAL CONVERTER EQUIPMENT HAVING REDUCED HARMONIC CIRCUITS

Lennart Sandberg, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Jun. 3, 1980, Ser. No. 156,233
Claims priority, application Sweden, Jun. 25, 1979, 7905534
Int. Cl.³ H02M *1/12*
U.S. Cl. 363—68 **5 Claims**

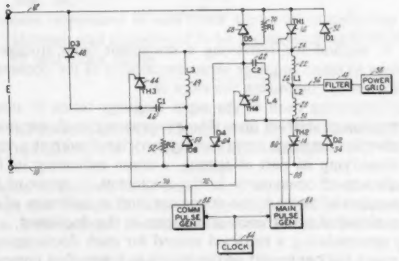


1. An electrical converter equipment comprising at least two converter bridges with controllable valves connected to the same a.c. network, and control means which delivers control pulses to the controllable valves of the bridges, said control means including means for preventing a control pulse from being delivered to a controllable valve in a first of said bridges until a commutation in a second of said bridges, occurring during the same half-period of the alternating voltage of said network, is completed.

4,358,820
INVERTER WITH INDIVIDUAL COMMUTATION CIRCUIT

Kenneth Lipman, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 29, 1980, Ser. No. 220,540
Int. Cl.³ H02M *7/515*
U.S. Cl. 363—135 **4 Claims**



1. An inverter for receiving electrical energy from a DC source and transforming it to alternating electrical energy at an output bus, comprising:

main switch means for alternatively connecting one of a pair of input buses to said output bus, said main switch means being translatable to the nonconducting state only when there is no load current therethrough;

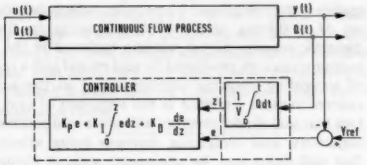
commutation means including a switch means connected in a resonant loop in series with a commutation capacitor and with an inductor, and further including a diode means connected to said resonant loop to clamp said commutation capacitor to the voltage potential of one of said pair of buses; and

whereby when said switch means in said series resonant loop is rendered conductive, said commutation capacitor discharges into said load for a sufficient period of time to allow said main thyristor which is conducting to switch to the off state.

4,358,821
METHOD AND APPARATUS FOR THE INCORPORATION OF VARYING FLOW IN THE CONTROL OF PROCESS QUANTITIES

Antti Niemi, Yrjö Liipolantie 5, Kauniainen, Finland

Filed Jun. 2, 1980, Ser. No. 155,751
Claims priority, application Finland, May 31, 1979, 791745
Int. Cl.³ G05B *11/42*
U.S. Cl. 364—152 **5 Claims**



1. A method for the incorporation of varying flow in the control of specified process quantities, which method comprises the steps of:

measuring the passing flow,

integrating the result of the passing flow measurement to determine the amount of material flowed through the process,

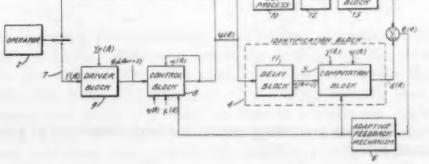
determining values of a variable in direct ratio to said amount of material, and

performing the control of said specified process quantities synchronously with regard to said variable.

4,358,822
ADAPTIVE-PREDICTIVE CONTROL SYSTEM

Juan M. Sanchez, 317 8515 112 St., Edmonton, Alberta, Canada (T6G 1K7)

Continuation-in-part of Ser. No. 138,001, Apr. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 821,600, Aug. 4, 1977, Pat. No. 4,197,576. This application Mar. 30, 1981, Ser. No. 249,230
Claims priority, application United Kingdom, Aug. 4, 1976, 32395/76
Int. Cl.³ G05B *13/04*; G06F *15/46*
U.S. Cl. 364—151 **20 Claims**



1. A method for generating a control vector during each of a plurality of sampling instants k, said control vector to be

applied to an apparatus which carries out a process having at least one input variable and at least one output variable, at least one of said input variables defining a process input vector, said apparatus varying said process input vector in accordance with the value of said control vector, said method comprising the steps of:

(A) storing a model which is capable of predicting the trajectory of a dynamic process output vector, which vector is composed of at least one of said process output variables, between future sampling instants $k+r+1$ and $k+r+1+\lambda$, λ being a positive integer, as a function of a future sequence of said control vectors between sampling instants k and $k+\lambda$;

(B) selecting, at each of said sampling instants k, a desired dynamic process output trajectory between sampling instants $k+r+1$ and $k+r+1+\lambda$, said desired dynamic process output trajectory being equal to that specific process output trajectory between sampling instants $k+r+1$ and $k+r+1+\lambda$, which said model predicts would be caused by a specific future sequence of control vectors between sampling instants k and $k+\lambda$, and such that said specific process output trajectory and said specific future control sequence optimize a chosen performance criterion defined by an index which includes a first set of weighting matrices corresponding to the set of dynamic process output vectors included in the process output trajectory predicted by said model and a second set of weighting matrices corresponding to the set of the control vectors included in the sequence of control vectors that said model predicts will cause said process output trajectory, said weighting matrices being selected such that said index may be minimized without requiring the solution of a Ricatti equation; and

(C) generating, at each of said sampling instants k, that control vector which said model predicts will cause said dynamic process output vector at sampling instant $k+r+1$ to be equal to the value of said desired dynamic process output trajectory at said sampling instant $k+r+1$, such that said control vector is equal to the value at sampling instant k of said specific control vector sequence and thereby optimizes said chosen performance criterion.

4,358,823

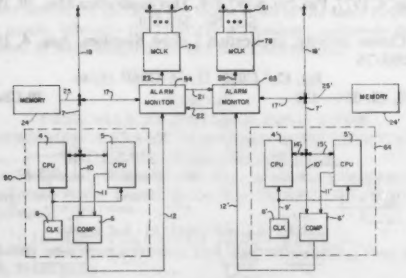
DOUBLE REDUNDANT PROCESSOR

John C. McDonald, Los Gatos, and James R. Baichtal, Los Altos, both of Calif., assignors to TRW, Inc., Mountain View, Calif.

Continuation of Ser. No. 781,437, Mar. 25, 1977, abandoned. This application Apr. 12, 1979, Ser. No. 29,380

Int. Cl.³ G06F *11/20*

U.S. Cl. 364—200 **16 Claims**



1. In a data processing system, a double redundant processor comprising:

first and second master processors for processing data, control and address signals of said system where said first master processor is in an active state for processing said signals and said second master processor is in a stand-by state for processing said signals, said first and second master processors each including:

first and second subprocessors having a common memory for simultaneously processing said signals, said first subprocessor having means for transmitting to and receiving from said system said data, control and address signals of said system and said second subprocessor having means for receiving said data, control and address signals of said system,

comparator means connected to continuously compare all of the processed signals from said first and second subprocessors for generating a comparison error signal when a comparison error occurs in the active master processor, and

alarm monitor means responsive to said error signal for inactivating the active master processor and activating the stand-by master processor when said error signal occurs.

4,358,824

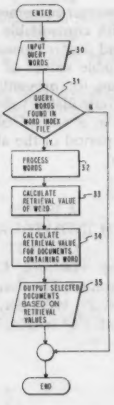
OFFICE CORRESPONDENCE STORAGE AND RETRIEVAL SYSTEM

David Glickman, Frederick, Md.; James T. Repass, Round Rock, Tex.; Walter S. Rosenbaum, and Janet G. Russell, both of Bethesda, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,994

Int. Cl.³ G06F *15/40*

U.S. Cl. 364—200 **11 Claims**



4. A method for retrieving a document from storage in response to input language terms descriptive of the content of the document comprising the steps of:

(a) comparing each of the input language terms to stored document abstract files of language terms, each document abstract language term having associated with it a code identifying its part of speech, a count indicating its frequency of occurrence in the document, a count of the number of pages in the document, and an indicator of the position of occurrence of the term in the document;

(b) accumulating a retrieval record for each document abstract file composed of the language terms that compare equal;

(c) calculating a document retrieval value for each retrieval record using the part of speech code, frequency count, number of pages in the document, and position indicator for each language term in the retrieval record;

(d) increasing the document retrieval value for each retrieval record that includes a month and/or year; and

(e) selecting the document corresponding to the highest calculated retrieval value for output.

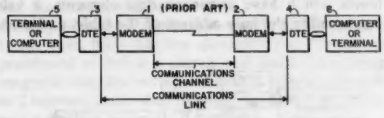
4,358,825
CONTROL CIRCUITRY FOR DATA TRANSFER IN AN ADVANCED DATA LINK CONTROLLER

Shikun Kyu, Yokohama, Japan, and Edward C. Hepworth, Chattanooga, Tenn., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 921,012, Jun. 30, 1978, Pat. No. 4,225,919. This application Mar. 21, 1980, Ser. No. 132,438

Int. Cl.³ G06F *3/04*

U.S. Cl. 364—200 **2 Claims**



1. In a data link controller for controlling data communications between a bidirectional data bus and a communications link transmitting and receiving data in serial form, said data link controller comprising a transmitter and a receiver, the improvement wherein said receiver comprises:

control means for controlling a multi-byte FIFO register comprising a plurality of N-bit registers, N being a positive integer, a first one of said N-bit registers being responsive to data received from said communications link, and each succeeding N-bit register being responsive bit-for-bit to the contents of the immediately preceding N-bit register, said bidirectional data bus being responsive to the contents of the last of said N-bit registers;

means for generating a clock signal for enabling data to transfer byte by byte on each transition of the clock signal that transfers data to the bidirectional data bus from the communications link; and

means responsive to said clock signal for transferring data through said plurality of N-bit registers on each transition of said clock signal, and

wherein said transmitter comprises:

control means for controlling a multi-byte FIFO register comprising a plurality of N-bit registers, N being a positive integer, a first one of said N-bit registers being responsive to said bidirectional data bus, and each succeeding N-bit register being responsive bit-for-bit to the contents of the immediately preceding N-bit register, said communications link being responsive to the contents of the last of said N-bit registers;

means for generating a clock signal for enabling data to transfer byte by byte on each transition of the clock signal from the bidirectional data bus to the communications link; and

means responsive to said clock signal for transferring data through said plurality of N-bit registers on each transition of said clock signal.

4,358,826
APPARATUS FOR ENABLING BYTE OR WORD ADDRESSING OF STORAGE ORGANIZED ON A WORD BASIS

Ronald E. Bodner, La Grange, Ga.; Thomas L. Crooks, Rochester, and Andrew H. Wottreng, Byron, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,714

Int. Cl.³ G06F *9/00*

U.S. Cl. 364—200 **8 Claims**

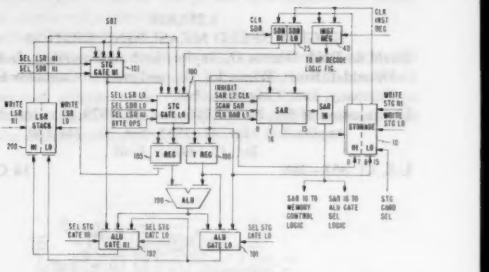
1. Apparatus for controlling byte and word addressing of storage organized by words where each word consist of two bytes, the improvement comprising:

a shiftable storage address register connected to address said storage,

logic means for providing a shift signal for byte storage addressing and a word address signal for word storage addressing,

storage access means responsive to said shift and word address signals for generating storage access signals,

means for selectively applying said storage access signals to said storage, and



means for selectively applying said shift signal to said address register whereby a shifted storage address is applied to storage for byte storage addressing and in the absence of said shift signal being applied to said address register a non-shifted storage address is applied to storage for word storage addressing.

4,358,827
CONTROLLING THE TREATMENT OF MIXTURES COMPRISING SOLID AND LIQUID

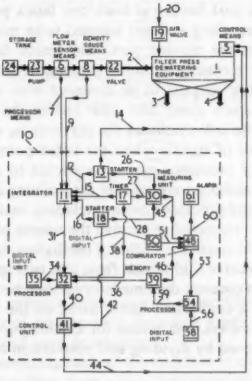
John Abbott, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Jul. 31, 1980, Ser. No. 173,921

Claims priority, application United Kingdom, Sep. 25, 1979, 7933128

Int. Cl.³ G06F *15/46*; B03B *5/24*

U.S. Cl. 364—500 **15 Claims**



8. Apparatus for controlling the treatment of a mixture of solid and liquid, comprising means for determining the mass flow rate of feed of untreated solid, means for determining the cumulative mass throughput of solid during running time, running time being the period of time in a treatment cycle during which the mixture feed is urged for treatment, said means including timer means for enabling a value of total treatment time to be determined, the total treatment time being the sum of running time and dead time, dead time being the period of time in a treatment cycle during which the mixture

feed is not urged for treatment, means for determining a value comprising the cumulative mass throughput of solids divided by the total treatment time, and surveillance means for monitoring said determined value until it reaches a maximum so that the treatment process is automatically optimized to produce maximum throughput rate of treated solids.

4,358,828

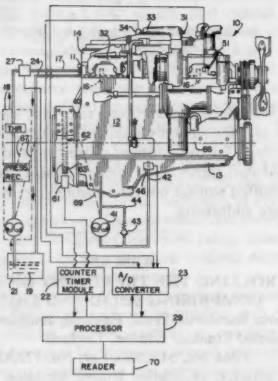
ENGINE SPEED MEASURING SYSTEM

David L. Reid; Dennis O. Taylor, both of Columbus, Ind., and Donald J. Brott, Winnetka, Ill., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation of Ser. No. 47,065, Jun. 11, 1979, abandoned. This application Mar. 17, 1981, Ser. No. 244,340

Int. Cl.³ G01P *3/48*

U.S. Cl. 364—565 **14 Claims**



1. A system for continuously sensing the instantaneous speed of an engine including a part that moves in a path of movement and at a speed related to the engine speed during operation of the engine, the part having at least one index point thereon, said system comprising a sensor adapted to be mounted on the engine adjacent the moving part, said sensor including two spaced sensing elements mounted thereon at fixed locations, said sensor being adapted to be mounted with said two elements spaced apart along said path and in the direction of movement of the index point as the part moves, said elements providing a pair of signals when the index point moves past said sensor, and processor means connected to said two elements for substantially continuously determining instantaneous engine speed, said processor means including oscillator means, counter means connected to receive the output of said oscillator means and to count the cycles of oscillation thereof, means connected to receive said signals from said two spaced sensing elements and to measure the time interval therebetween, means for calculating a conversion factor based on the frequency of said oscillator means, and means for calculating the instantaneous engine speed by dividing said conversion factor by said time interval.

4,358,829

DYNAMIC RANK ORDERED SCHEDULING MECHANISM

Michael H. Branigin, Penllyn; Francis P. Knebel, Philadelphia, and Gerald V. McClellan, Graterford, all of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,367

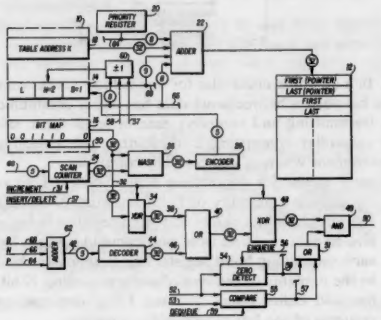
Int. Cl.³ G06F *7/00*

U.S. Cl. 364—900 **11 Claims**

1. In a dynamic rank ordered scheduling mechanism for enqueuing data elements on and dequeuing data elements from lists, the improvement comprising:

storage means for storing a queue control block and a list head table having a plurality of ranks with each rank representing a priority level and controlling an associated list comprising a plurality of data elements which are stored in said storage means;

said queue control block including a value B representing a pointer to the table rank from which a dequeue last occurred, a value N representing a count of the priority levels which have enqueued data elements, a value K representing the base address of the table, and a bit map



having a binary bit position corresponding to each of said ranks;

means for applying a data element to said storage means;

means providing an indication of the priority (P) of a data element applied to said storage means;

means for summing K, N, B and P to produce an enqueue address representing a rank in said list head table;

means for applying said enqueue address to said table to enqueue a data element applied thereto; and,

means connected to said storage means for setting the corresponding bit position in said bit map and incrementing said value N when a data element is first enqueued on a given rank of said table.

4,358,830

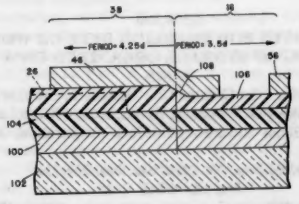
BUBBLE MEMORY WITH ENHANCED BIT DENSITY STORAGE AREA

Peter K. George, Morgan Hill, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 25, 1980, Ser. No. 180,834

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—39 **1 Claim**



1. A magnetic bubble memory chip comprising:

a garnet film;

a first insulating layer made of silicon dioxide overlying the garnet film;

a pattern of control conductors made of an electrically conductive material overlying the first insulating layer

and extending in a plurality of control function areas of the chip adjacent the peripheral edges of the chip;

a second insulating layer made of silicon dioxide overlying the control conductors and the first insulating layer, the second insulating layer having a thickness in the control function areas of the chip to yield a permalloy to garnet spacing of 5,000 angstroms, a thickness in a storage of the chip located in the medial portion thereof to yield a permalloy to garnet spacing of 3,000 angstroms, and a junction having an inclined upper surface between the portions of the second insulating layer in the control-function areas and the storage area; and

a plurality of permalloy elements overlying the second insulating layer, the permalloy elements being configured and positioned to define a plurality of paths for propagating magnetic bubbles having a diameter of approximately 1.5 to 2 microns under the influence of a Z-bias magnetic field and a rotating magnetic drive field,

a first portion of the paths being located in the control function areas and a second portion of the paths being located in the storage area,

the period of the permalloy elements in the control function areas being approximately 4.25 times the diameter of the magnetic bubbles, and

the period of the permalloy elements in the storage area being approximately 3.5 times the diameter of the magnetic bubbles;

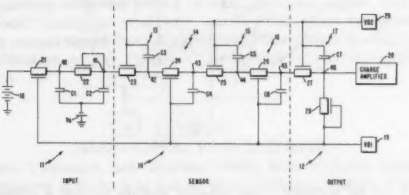
whereby the bit density in the storage area of the chip will be significantly greater than that in the control function areas of the chip while the propagation margins for the magnetic bubbles in the control function areas and the storage area will be substantially equal.

4,358,831

SELF-BIASING CIRCUIT FOR ANALOG SHIFT REGISTERS, WITH FAT ZERO COMPENSATION

James D. Tompkins, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1980, Ser. No. 202,107
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—183 **11 Claims**



10. A storage system comprising:

a series shift register array composed of a plurality of capacitive charge transfer cells serially arranged between an input terminal and an output terminal, each cell storing a single bit of information and consisting of only a transistor having input, output, and control terminals and a storage capacitor connected between the output terminal of the transistor and its control terminal,

an input stage coupled to the input terminal of said series shift register,

an output stage coupled to the output terminal of said series shift register,

first voltage means coupled to the control terminals of alternate cells in the series for introducing into the storage system a first sequence of pulses to cause the information in said alternate cells to be sequentially transferred to cells positioned adjacent said alternate cells, and

second voltage means coupled to the control terminals of said adjacent cells for introducing into the storage system a second sequence of pulses to cause the information in said adjacent cells to be sequentially transferred into said alternate cells,

said input stage including a first voltage node,

a source of reference potential,

first capacitance means connected to said first voltage node,

means for periodically electrically coupling said source of reference potential to said first voltage node and said first capacitance means to charge said first capacitance means to a selected potential

a second voltage node,

a second capacitor, coupled to said second voltage node, and

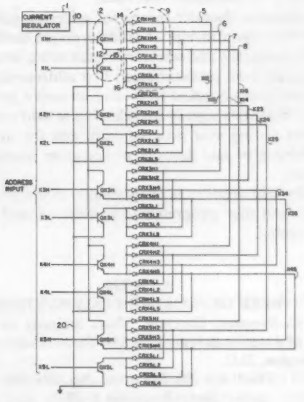
a semiconductor diode coupled between said first and said second voltage node for charging said second voltage node to a level determined by said selected potential and the characteristic of said diode.

4,358,832

MINIMIZED MAGNETIC CORE MEMORY DRIVER SYSTEM

Richard C. Warner, Morris Plains, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Aug. 15, 1980, Ser. No. 178,415
Int. Cl.³ G11C *8/00*
U.S. Cl. 365—196 **5 Claims**



1. A core memory driver system comprising:

a plurality of drivers, each including a pair of switches;

a plurality of core drive-lines;

means connecting each of the switches to the lines to enable current to flow from a preselected switch, operating as a source for a corresponding driver, to another switch operating as a sink in any of the remaining drivers, thereby populating all of the possible paths between drivers;

wherein the relationship between the number of drivers and drive-lines is:

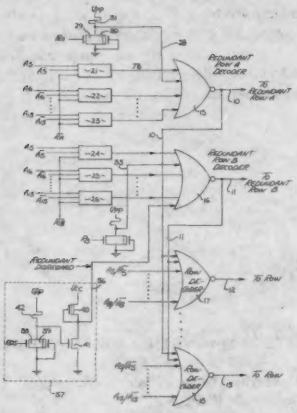
$$\frac{n!}{(n-2)!\,2!} = \text{number of drive-lines}$$

where n=number of drivers.

4,358,833
MEMORY REDUNDANCY APPARATUS FOR SINGLE CHIP MEMORIES

Alan C. Folmsbee, Santa Clara; Kim Kokkonen, Campbell, and William J. Spaw, Moss Beach, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 30, 1980, Ser. No. 192,494
Int. Cl.³ G11C 7/00
U.S. Cl. 365—200 **11 Claims**



1. In a memory which includes first lines selected by first address signals and second lines selected by second address signals, an improved redundancy apparatus comprising:

a plurality of redundant first lines;

programmable decoder means for selecting said redundant first lines upon receipt of predetermined ones of said first address signals, said selection means being programmed to recognize said predetermined first address signals;

selection means coupled to receive at least a portion of said second address signals for selection of said programmable means during said programming and for disabling programming of said decoder means upon receipt of certain signals;

whereby said memory is programmed to use said redundant lines, and then programmed to prevent inadvertent programming.

4,358,834
SELF-DEPLOYING BUOY SYSTEM

Richard C. Swenson, Carriere, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 16, 1981, Ser. No. 254,809
Int. Cl.³ H04B 1/59
U.S. Cl. 367—4 **3 Claims**

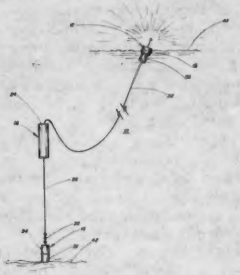
1. A self-deploying buoy system comprising:

a mid-water buoy assembly having a buoyancy section;

a surface buoy assembly having an upper cable pack extending downward from said surface buoy assembly and containing a baled upper cable, said surface buoy assembly being nested in one end of said mid-water buoy assembly prior to deployment with the free end of said upper cable attached to said mid-water buoy assembly; and

a sea floor assembly having a lower cable pack extending upward from said sea floor assembly and containing a baled lower cable and sensors, said sea floor assembly being nested in the other end of said mid-water buoy assembly prior to deployment with the free end of said lower cable attached to said mid-water buoy assembly to provide electrical continuity between said sensors and said surface buoy assembly;

whereby when said buoy system is deployed said sea floor

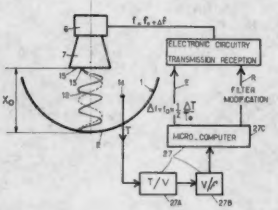


assembly sinks to the bottom, said mid-water buoy assembly holds said lower cable and sensors vertically and all said upper and lower cables are spent from said upper and lower cable packs.

4,358,835
METHOD AND DEVICE FOR MATCHING THE REFLECTOR OF AN ACOUSTIC ECHO RANGING SYSTEM

Jean-Michel Fage, Paris, France, assignor to Bertin & Cie, Plaisir, France

Filed Dec. 22, 1980, Ser. No. 218,827
Claims priority, application France, Dec. 27, 1979, 79 31740
Int. Cl.³ G01S 7/52; G10K 11/28
U.S. Cl. 367—87 **11 Claims**

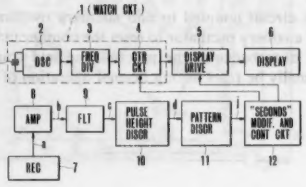


1. In an acoustic echo ranging system having a reflector paraboloid and designed for transmitting an acoustic signal towards a target, receiving the resulting echo signal and processing said signals for data acquirement, a method of matching the reflector in order to improve the quality of reception of said echo signal as picked up by a horn having an exit plane which, under optimum echo signal reception conditions, lies adjacent the focal point of said paraboloid, the focal length of which is a whole multiple of half the transmitted wavelength, this multiple being a characteristic of the configuration of said paraboloid whose reception conditions are upset by the appearance of a pattern of interference fringes which is established naturally between the bottom of the paraboloid and the horn and which evolves with the temperature prevailing at the bottom of the reflector, wherein the improvement comprises the step of automatically correcting this evolution in the pattern of interference fringes by an adjustment dependent on said temperature whereby the position of the exit plane of the horn is caused to coincide with the same pressure antinode located as being spaced from the bottom of the paraboloid by said multiple of the half-wavelength.

4,358,836
ELECTRONIC WATCH WITH AN AUTOMATIC TIME INDICATION MODIFIER

Nobuo Tohyama; Junichi Yoshida; Shozo Yamano, and Kenji Kamiya, all of Ena, Japan, assignors to Ricoh Watch Co., Ltd., Nagoya, Japan

Filed Nov. 15, 1979, Ser. No. 94,631
Claims priority, application Japan, Nov. 20, 1978, 53/142300; Nov. 20, 1978, 53/142302; Dec. 28, 1978, 53/161068; Dec. 28, 1978, 53/161070; Oct. 20, 1979, 54/135514
Int. Cl.³ G04C *11/02*
U.S. Cl. 368—47 **17 Claims**

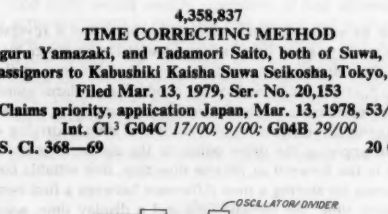


1. An electronic watch including a watch circuit and a display, the watch circuit including a clock generator, a frequency divider coupled to said clock generator, and means coupling said display to said frequency divider, the watch being provided with an automatic time indication modifier which comprises: a microphone for picking up a correct time announcement sound from a radio, television, telephone headset or the like; an amplifier for amplifying the signal picked up by the microphone; a filter which passes only that component of the signal from the amplifier which has the same frequency as a time announcement signal; a pulse height discriminator for converting an output signal from the filter into a bi-level signal in accordance with the magnitude of the signal above a threshold level; a time announcement pattern discrimination circuit means responsive to the bi-level signal and to a reference signal provided by said frequency divider for determining the presence of a time announcement pattern on the basis of the duration of and the time interval between the bi-level signals in comparison with the period of said reference signal; and a "second" indication modifying and control circuit responsive to an output signal from the discrimination circuit to effect a modification of the "seconds" indication of the electronic watch.

4,358,837
TIME CORRECTING METHOD

Suguru Yamazaki, and Tadamori Saito, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,153
Claims priority, application Japan, Mar. 13, 1978, 53/28518
Int. Cl.³ G04C *17/00, 9/00;* G04B *29/00*
U.S. Cl. 368—69 **20 Claims**

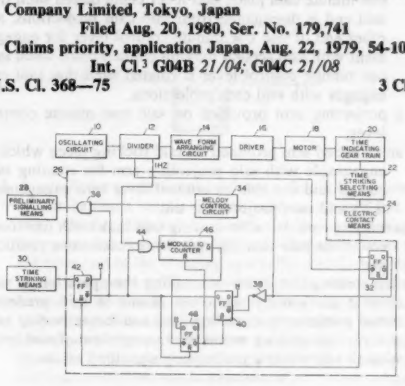


1. An electronic timepiece including a plurality of digitally displayed functions comprising:
an oscillator circuit providing a high frequency timing output signal;
a divider network, said divider network dividing down said high frequency signals to produce timekeeping function signals of lower frequency;
display means for visibly presenting said timekeeping functions;
display driver means, said driver means having said timekeeping signals inputted thereto and outputting pulses for driving said display means;
rotary switching means including a plurality of contacts, said contacts closing and opening when said switching means is rotated;
a power source cooperating with said contacts, whereby switch signals indicating the open or closed condition of said contacts are produced;
circuit means sensing said switch signals and adapted to determine, by the sequential order of the closing and opening to said contacts, the rotational direction of said switch means, and to cause one correction in the display of at least one function when said switch means is rotated in one direction and to cause another correction in the display of at least one function when said switch means is rotated in the other direction;
said circuit means correcting said display means by inputting additional pulses to said display driver means, said additional pulses being derived from said divider network.

4,358,838
ELECTRONIC TIMEPIECE WITH A TIME STRIKING DEVICE

Norihiko Nakamura, Tokyo, Japan, assignor to Rhythm Watch Company Limited, Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,741
Claims priority, application Japan, Aug. 22, 1979, 54-106746
Int. Cl.³ G04B *21/04;* G04C *21/08*
U.S. Cl. 368—75 **3 Claims**



1. An electronic timepiece with a time striking device comprising:
an electric preliminary signalling means;
an electric time striking means;
an electric contact means electrically controlling the operation of said electric preliminary signalling means, said contact means comprising at least first and second moving contact plates;
a time striking selecting means synchronously rotating with a time indicating gear train to control said electric contact means in a state capable of switching ON action at a predetermined preliminary signalling time, said selecting means comprising:
a time striking selecting cam plate which rotates once each hour;
a cam projection provided on said time striking selecting cam plate at a position corresponding to a predetermined preliminary time before an hour position;
a rocking cam plate which rotates once each twelve hours;
at least twelve step cam surfaces provided on said rocking cam plate, said step cam surfaces being arranged and

configured such that a radius of said rocking cam plate increases from a first step cam surface to a twelfth step cam surface;

a one minute cam plate rotating in synchronism with a time indicating gear train;

at least eight cam projections provided on said one minute cam plate, said cam projections rotating one pitch per minute;

a rocking gear of generally T-shape and rotatable about an end of a stem of said T-shape;

a plurality of rack teeth provided on a cross bar of said T-shaped rocking gear;

a cam follower provided on said rocking gear which is biased into engagement with said step cam surfaces;

an elongated rocking lever which is rotatable about one end and having another end for engagement with said rack teeth, said elongated rocking lever further engaging with said first moving contact plate and for moving said first moving contact plate towards said second moving contact plate when said another end is engagement with said rack teeth;

a rocking piece provided with a cam follower which is biased into engagement with said time striking selecting cam plate, said rocking piece for moving said second moving plate away from said first moving plate when said cam follower engages with said cam projection on said time striking selecting cam plate;

an elongated one minute control lever rotatable about a point between a two ends of said lever, one end of said lever for engagement with said cam projections of said one minute cam plate, said lever being biased such that said end is disengaged from said cam projections, another end of said one minute control lever for engagement with said second moving contact plate when said one minute control lever is rotated such that said end engages with said cam projections;

a projecting arm provided on said one minute control lever;

an extended arm provided on said rocking piece which is engageable with said projecting arm for rotating said end of said one minute control lever into engagement with said cam projections; and

a rotating cam drive for moving said rack teeth one tooth each time said rotating cam drive rotates one rotation; and

a time striking circuit for controlling the operation of said electric preliminary signalling means at said predetermined preliminary signalling time and for activating said electric time striking means after completion of said operation of said electric preliminary signalling means.

4,358,839

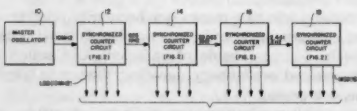
ABSOLUTE DIGITAL CLOCK SYSTEM

Ernest C. Wittke, West Caldwell, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed May 1, 1979, Ser. No. 35,118

Int. Cl.³ G06F *1/04*; G04B *17/12*; H03B *5/32*

U.S. Cl. 368—159 **10 Claims**



1. An electronic clock system for counting absolute time even in the presence of a disturbance which prevents electronic functioning of the system for a certain time interval, said system including:

a master crystal-controlled oscillator whose crystal is adapted to continue to vibrate due to mechanical inertia for the duration of the time interval, and a series of count-down stages driven by said master oscillator and phase-locked to selected sub-multiples of the frequency of said master oscillator, each of said count-down stages including a binary counter driven by an input signal derived from a preceding stage;

a crystal-controlled auxiliary oscillator whose crystal is adapted to continue to vibrate due to mechanical inertia for the duration of the time interval without loss of phase with respect to the crystal of said master oscillator;

a phase-lock circuit intercoupling the counter to the auxiliary oscillator to phase-lock the auxiliary oscillator to a selected sub-multiple of the master oscillator frequency; and

a reset circuit coupled to said auxiliary oscillator to cause said auxiliary oscillator to reset the counter in the event of said disturbance at the precise time said counter would normally be reset during normal operation of the system.

4,358,840

ANALOGUE ALARM ELECTRONIC TIMEPIECE

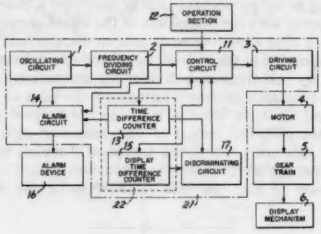
Kenichi Ono; Shuji Otawa, and Masaharu Shida, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Feb. 25, 1980, Ser. No. 124,255

Claims priority, application Japan, Feb. 26, 1979, 54-21642

Int. Cl.³ G04C *21/16, 23/14*

U.S. Cl. 368—251 **3 Claims**

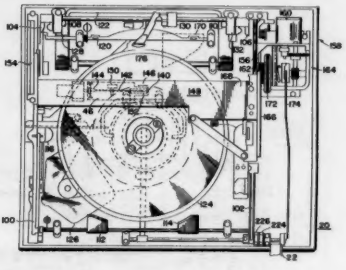


1. In an analogue alarm electronic timepiece: a reversible rotary motor; a set of time hands connected to be driven by the motor for indicating a present time and an alarm time; an alarm device operable when enabled for producing an alarm sound at a preset alarm time; an electronic circuit comprising means for developing drive pulses representative of time, a driving circuit for applying the drive pulses to the motor to rotate the motor in the forward or reverse direction, first settable memory means for storing a time difference between a first two of the alarm time, the present time and a display time, second settable memory means for storing a time difference between a second two different than the first two of the alarm time, the present time and the display time, first means for detecting the coincidence between the first two times, and second means for detecting the coincidence between the second two times; and operating means including a set of externally operable switches coacting with the electronic circuit for controlling the drive of the time hands by the motor to selectively position the time hands at desired alarm time and display time settings accompanied by setting of the first and second memory means in accordance with the selected position of the time hands and to selectively re-position the time hands at the previously set alarm time to enable the user of the timepiece to confirm the preset alarm time and for enabling the alarm device.

4,358,841
VIDEO DISC PLAYER HAVING STYLUS PROTECTING APPARATUS

Charles B. Carroll, Trenton, N.J., and Alfred L. Baker, Zionsville, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,569
Int. Cl.³ G11B *3/58, 3/10*
U.S. Cl. 369—77 **5 Claims**



5. In a player for recovering prerecorded information from a turntable-supported disc record by means of a record-engaging pickup stylus disposed at one end of a stylus arm during playback; said player including means for selectively lowering said stylus on said record for playback; said selectively lowering means having a stylus arm support, means for yieldably biasing said stylus arm support in a raised position to dispose said stylus away from said turntable, and a selectively-energized electromagnetic means for overcoming said bias to lower said stylus; said electromagnetic means comprising a winding having a pair of terminals; one of said terminals being connected to a given potential source; the other of said terminals being connected through a play switch to a ground potential sink; operation of said play switch causing said given potential source to drive a current through said winding in a first direction into said ground potential sink to effect said stylus lowering; apparatus comprising:

(A) a higher potential source;

(B) a record load/unload switch;

(C) means for connecting said higher potential source to said other terminal of said winding via said load/unload switch; and

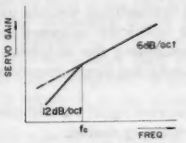
(D) means for alternatingly actuating said play switch and said load/unload switch; operation of said alternatingly actuating means to open said play switch and to close said load/unload switch serving to disconnect said ground potential sink from said other terminal of said winding to block said current from passing through said winding in said first direction, and serving to cause said higher potential source to drive a current to flow through said winding in a reverse direction into said given potential sorce to prevent any tendency of said stylus to come down.

4,358,842
RECORD PLAYER

Shuichi Kimura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,987
Claims priority, application Japan, Jul. 10, 1979, 54/86438
Int. Cl.³ G11B *3/12*
U.S. Cl. 369—233 **10 Claims**

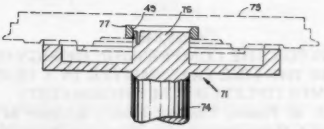
1. A record player, comprising: an arm having a predetermined resonance frequency, a turntable adapted to carry a disk, a motor connected for driving said arm in a horizontal direction with respect to said disc carried on said turntable, a motor driving circuit means connected to said motor and including a negative feedback servo loop, said servo having a detector means for detecting vibration of said arm and for generating an output frequency in response to said vibration of said arm, said servo loop including a high pass filter having a cut-off frequency which is the same or lower than said resonance frequency, the motor being controlled by an output of said motor driving circuit means in proportion to an accelerated velocity of said arm when said arm is vibrated at less than said cut-off frequency.



4,358,843
SPINDLE FOR CENTERING A DATA DISK

Edgar A. Rager, 601 Almarida Dr., Apt. T6, Campbell, Calif. 95008

Filed Sep. 29, 1980, Ser. No. 192,068
Int. Cl.³ B23B *31/18*
U.S. Cl. 369—261 **12 Claims**

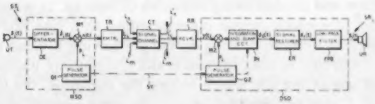


1. A spindle for centering and driving a disk hub comprising, a spindle having a lengthwise axis with an upward free end over which a disk hub is placed, the free end having an interrupted peripheral slot with a U-shaped cross section, the open end of the U facing upwardly, and the slot defining at least one upright finger from the base of the U extending upwardly, the base of the U fixed integrally with the spindle, said finger having a radially outwardly facing peripheral surface with a face portion at the upper tip of the finger extending radially outwardly further than the base toward the inside diameter of a disk hub, whereby said finger will be compressed inwardly by the face portion contacting the hub, centering the hub on the spindle.

4,358,844
METHOD OF AND MEANS FOR SPREAD-SPECTRUM TRANSMISSION

Giancarlo Pirani, Turin, Italy, assignor to Cselt, Centro Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Dec. 12, 1980, Ser. No. 215,794
Claims priority, application Italy, Dec. 13, 1979, 69389 A/79
Int. Cl.³ H04J *13/00*
U.S. Cl. 370—18 **7 Claims**



1. A method of sending signals from a plurality of transmit-

ting stations to respective receiving stations over a common channel, comprising the steps of:

(a) differentiating an outgoing analog signal at a given transmitting station to produce a time derivative thereof;

(b) multiplying said time derivative at the given transmitting station with a sequence of bipolar binary pulses individual thereto and essentially uncorrelated with pulse sequences employed at other transmitting stations using said common channel, said individual sequence having a basic pulse period not exceeding the reciprocal of twice the bandwidth of said outgoing signal, to produce a distorted signal;

(c) conveying said distorted signal via said common channel to the associated receiving station;

(d) multiplying the incoming distorted signal at the associated receiving station with a synchronized replica of said individual sequence to re-establish the time derivative of step (b) possibly encumbered by interfering signals from other users of said common channel;

(e) integrating the re-established time derivative over intervals equaling said basic pulse period to produce a succession of signal samples of uniform width;

(f) combining said signal samples into a continuous wave substantially purged of interfering signals and with a low-frequency component conforming to said outgoing analog signal; and

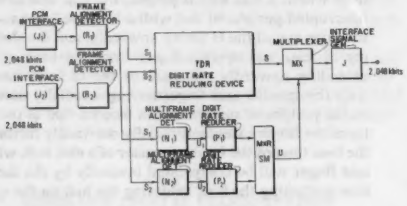
(g) isolating said low-frequency component.

4,358,845

PROCESS FOR THE COMPRESSION OF SIGNALLING DATA OR THE LIKE TRANSMITTED IN A TRAIN OF MULTIPLEXED PCM INFORMATION

Guy A. M. de Passoz, Lesigny, France, assignor to Societe Anonyme de Telecommunications Company, Paris, France

Filed Mar. 5, 1980, Ser. No. 127,268
Int. Cl.³ H04J 3/12
U.S. Cl. 370—44 **3 Claims**



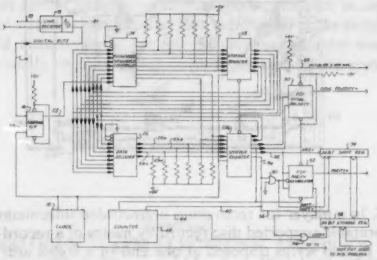
1. A process for the compression of signalling data or the like transmitted in a stream of digital PCM information organized in multiplexing frames, the signalling data being inserted in a specific time slot of the PCM frames, the signalling binary digits transmitted in the same PCM frame belonging to independent singalling channels a, b, . . . of rate H_1, comprising the steps of extracting the signalling data from the digital stream and effecting in parallel, for each signalling channel, a processing comprising the steps of coding the transitions by a group of binary digits of which the first indicates the polarity of the transition and the following indicates or indicate in which nth fraction of a clock period corresponding to a rate H_1/n the transition is located, n being an integer having a value in the range from two to five, inclusive, and transmitting unchanged at least one of the bits which follow the transition, the signals L_a, L_b . . . thus obtained containing the same quantity of information as the signalling channels, but having a rate divided by n.

4,358,846

SERIAL DATA CORRELATOR/CODE TRANSLATOR

Larry E. Morgan, Titusville, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 27, 1979, Ser. No. 61,327
Int. Cl.³ G06F 11/00
U.S. Cl. 371—6 **2 Claims**



1. A system for analyzing asynchronous signals containing bits of information for ensuring the validity of said signals comprising:

(a) a bit sampling means having a first input receiving said signals to be analyzed and an output;

(b) clock means connected to said bit sampling means for causing said bit sampling means to sample each bit of information supplied thereto a plurality of times producing a plurality of sampled signals;

(c) a sequence controller means connected to the output of said bit sampling means;

(d) a plurality of programs stored in said sequence controller means representing maps having a plurality of sequence steps;

(e) means for feeding said sampled signals to said sequence controller means and for sequentially stepping said sampled bits through said plurality of steps of said maps;

(f) said sequence controller means generating coded signals identifying the steps as said sampled signals are stepped therethrough;

(g) a storage register means having a plurality of input terminals and output terminals;

(h) means for connecting said input terminals of said storage register means to said sequence controller for receiving coded signals from said sequence controller indicating the step that said sequence controller is in,

(i) means for connecting said output terminals of said storage register means to said sequence controller means;

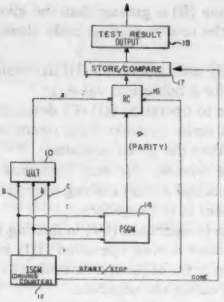
(j) said storage register means generating signals identifying the sequence step that said sequence controller is operating in and supplying this signal back to said sequence controller means for controlling the sequential stepping of the sequence controller means as additional pieces of sampled bits are received; and

(k) a data decoder means connected to said output terminals of said storage register means for decoding said signals generated by said storage register and producing predetermined output signals indicating that a particular step has been reached in said sequence controller.

4,358,847
ELECTRICAL CIRCUIT TEST APPARATUS AND METHOD

Alfred K. Susskind, Allentown, Pa., assignor to Lehigh University, Bethlehem, Pa.

Filed Sep. 2, 1980, Ser. No. 183,367
Int. Cl.³ G01R *31/28;* G06F *11/00*
U.S. Cl. 371—25 **8 Claims**



1. Apparatus for testing an n-input combinational circuit comprising

(a) an input signal pattern means for generating a plurality of electrical input signal patterns, said plurality consisting of the set of all binary numbers that can be formed from n digits, said means adapted to address each of said signal patterns sequentially to the input leads of a circuit to be tested,

(b) a parity signal generating means for emitting a parity signal responsive to each input signal pattern generated by said input signal means, said parity signal being 0 to 1 and being indicative of whether the number of zeros in each of said input signal patterns is odd or even,

(c) reversible counter means adapted to receive from a circuit under test, an output signal either 0 or 1 for each input signal pattern addressed thereto and comparing the corresponding parity signal therewith, said reversible counter means including arithmetic scoring means for cumulatively either

(1) if said parity signal is one for an even number of zeros in an input signal pattern, adding a one each time said output signal and parity signal are the same, subtracting a one each time they are different, or

(2) if said parity signal is 0 for an even number of zeros in an output signal pattern, adding a one each time said output signal and parity signal are different and subtracting a one each time they are the same.

4,358,848
DUAL FUNCTION ECC SYSTEM WITH BLOCK CHECK BYTE

Arvind M. Patel, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

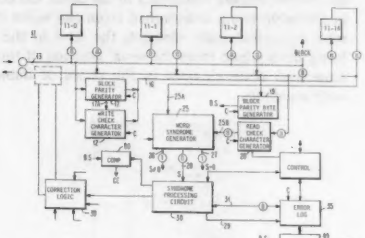
Filed Nov. 14, 1960, Ser. No. 206,778
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—39 **20 Claims**

1. In a dual function ECC system for alternately correcting from a single syndrome byte random 1-bit errors in a data word having M-1 data byte positions and one check byte position, or multi-bit errors in the same byte position of successive data words, where corresponding bytes of successive data words are each stored in a failure independent storage unit and where each said syndrome byte is developed from a write check character and a read check character where each bit position of said check characters represents the modulo-2 sum of the value of data in bit positions of a data word which have been selected from a parity check matrix H′ derived from a parity check matrix H which corresponds to an m-sequence of length 2^b-1 where b is equal to the number of bit positions in each said byte, said H′ matrix being derived by selecting M b×b submatrices from said H matrix which are spaced apart λ-b columns, where λ is greater than b and is selected such that none of the selected submatrices overlap, and means for generating said syndrome byte for each word, said system including:

(a) a syndrome processing circuit having an input and an output and operable to provide at said output a sequence of different b bit vectors, each vector being positionally related in said m-sequence to said syndrome byte by a factor Kλ where K is the position number in said sequence;

(b) means for transferring each non-zero syndrome byte to said processing circuit; and

(c) means responsive to the output of said processing circuit to indicate the byte location and error pattern of a random single-bit error in said data word and for correcting said error, the improvement comprising:



(1) means for logging the indicated byte location, the single-bit error pattern, and said non-zero syndrome byte for each processed word where a correction was made for a predetermined number of processed words;

(2) means for generating a write block check character, a read block check character, and a block syndrome byte from said block check characters which is related by a linear function to the sum of all errors which occurred in the data byte positions of said predetermined number of processed words;

(3) a comparator; and

(4) summing means to provide a summed error pattern byte from all said single-bit error patterns; said comparator being operable at the end of each said block of words for comparing said block syndrome byte with said summed error pattern byte to confirm the validity of each said single-bit error pattern correction.

4,358,849
METHOD OF CHECKING VALIDITY OF CODED ALPHA/NUMERIC SIGNALS WITH A DATA PROCESSOR AND A MEMORY

Jacques Sery, Vitry sur Seine, France, assignor to Compagnie Internationale Pour l'Informatique Cii Honeywell Bull, Paris, France

Continuation of Ser. No. 883,932, Mar. 6, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,433
Claims priority, application France, Mar. 4, 1977, 77 06484
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—53 **9 Claims**

1. A method of checking the validity of coded signals adapted to represent alpha and numerical values, each of said coded signals consisting of (a) a series of code elements and (b) a checking key corresponding to a digit value of a first element of the coded signals, the coded signal being checked with a data processing means and a memory including an addressable dual input table having a number of rows at least equal to the

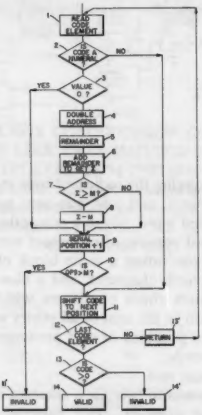
maximum number of code elements of each coded signal and a number of columns at least equal to all the possible numerical values of a code element, columns and rows in said table being respectively addressed by the numerical value of a code element and by the relative position of said code element in the coded signal, the location defined by the intersection of the addressed column and said row containing an entry for a remainder, the remainder having a value equal to the numerical value of said code element multiplied by a coefficient assigned to the relative position divided by a given modulus, comprising the steps of, in the data processing means:

(I) reading a code element,

(II) checking each code element read during operation (I) to determine if the code element represents a numerical value, in response to the code element representing a numerical value:

(A) determining if the read code element has a numerical value equal to zero, in response to the read code element not being equal to zero:

(a) determining the address of the row and column of the corresponding remainder in the table, the column in the table being determined from the value of the read numerical code element, the row in the table being determined from the serial position of the read numerical code element in the series of numerical code elements,



(b) reading the remainder from the table corresponding to the appropriate column and row,

(c) determining if the first numerical code element in the series is being processed,

(i) in response to there being a determination that the first numerical code element in the series is being processed adding the checking key to the remainder read during operation (b),

(ii) in response to there being a determination that the first numerical code element in the series is not being processed adding the remainder read during operation (b) to the previous remainder;

(d) determining whether the total obtained during operation (c) is greater than or equal to the given modulus,

(i) only in response to the total obtained during operation (c) being not less than the modulus, subtracting the modulus from the total obtained during operation (c),

(B) incrementing the series position of the read code element position in the sequence by a count of one in accordance with one of:

(a) immediately after the operation (A) if operation (A) determines that the code element has a numerical value of zero, or

(b) immediately after determining operation (A) (d) if operation (A) (d) determines that the total obtained during operation (A) (c) is less than the given modulus, or

(c) after operation (A) (d) (i) if operation (A) (d) determines that the total obtained during operation (A) (d) is greater than or equal to the given modulus,

(C) determining whether the incremented series position from operation (B) is greater than the given modulus;

(III) shifting to the next numerical code element in the sequence:

(A) immediately after operation (II) determining that the code is not for a numerical value, or

(B) in response to operation (II) (C) determining that the incremented series position from operation (II) (B) is not greater than the given modulus;

(IV) determining whether the next numerical code in the sequence, as reached during shifting operation (III), is the last code element in the sequence,

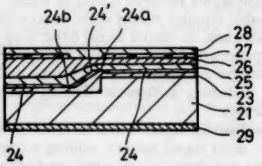
(A) in response to operation (IV) indicating that the code element reached during operation (III) is not the last code element in the sequence, returning to operation (I) and then repeating the sequence.

4,358,850

TERRACED SUBSTRATE SEMICONDUCTOR LASER

Takashi Sugino; Masaru Wada, both of Takatsuki; Hirokazu Shimizu, Toyonaka, and Kunio Itoh, Uji, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 10, 1980, Ser. No. 185,921
Claims priority, application Japan, Sep. 18, 1979, 54-119872
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—45 **5 Claims**



1. In a semiconductor laser the improvement comprising:

a terrace-shaped semiconductor substrate having an upper face, a lower face and a step part disposed between said upper face and said lower face,

a first clad layer formed on said semiconductor substrate to have an upper flat part, a lower flat part and a central sloped surface part disposed between said upper flat part and said lower flat part, said upper flat part being on said upper face, said lower flat part being on said lower face, and said central sloped surface part being on said lower face and on said step part,

an active layer formed on said first clad layer and having two discontinuity places on the parts which are on bending parts from said central sloped surface parts to said upper flat part and to said lower flat part, said active layer has a thickness on said central sloped surface part larger than those on said upper flat part and said lower flat part, said active layer including a lasing region on said central sloped surface part between said two discontinuity places,

a second clad layer formed on said active layer, and

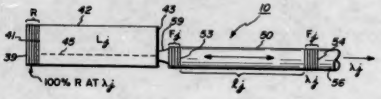
a current injection electrode disposed above said lasing region.

4,358,851

FIBER OPTIC LASER DEVICE AND LIGHT EMITTER UTILIZING THE DEVICE

Donald R. Scifres; Robert D. Burnham, both of Los Altos, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 28, 1980, Ser. No. 125,415
Int. Cl.³ H01S *3/082*
U.S. Cl. 372—97 **10 Claims**



1. A solid state laser capable of producing a controlled narrow wavelength of emission and including a radiation generating medium within a first optical cavity, a passive waveguide medium forming a second optical cavity, said cavities being optically coupled together, reflector means at the extremities of said caviies and at the point of their coupling, at least one of said reflector means being a narrow band reflector having a peak reflectivity within the gain spectra of radiation emission from said medium whereby a dual cavity is established selective of a narrow band of operating wavelengths.

4,358,852

METHOD OF MODULATION AND DEMODULATION OF DATA AND APPARATUS FOR CARRYING OUT THE SAME

Shunsuke Ichikawa, and Masato Tanaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 142,030
Claims priority, application Japan, Apr. 24, 1979, 54/50976
Int. Cl.³ H04L *1/10*
U.S. Cl. 375—25 **9 Claims**

5. Apparatus for modulating data for converting data words of four bits of binary information to converted data words of twelve bits according to a predetermined coding scheme in which successive bits of one type are separated by at least a predetermined plurality of bits of a complementary type, comprising

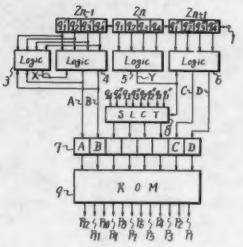
receiving means for receiving a plurality of successive data words of four bits;

logic means coupled with said receiving means to determine whether a bit of said one type in a first one of said converted data words according to said predetermined coding scheme and a bit of said one type in the next successive one of said converted data words according to said predetermined coding scheme will be separated from each other by less than said predetermined plurality of bits of said complementary type;

coding means for selectively providing said converted data words according to said predetermined coding scheme and according to an alternate coding scheme; and

selecting means coupled to said coding means and responsive to said logic means to cause said converting means to provide said converted data words according to said predetermined coding scheme and said alternate coding scheme when said bits of one type in said converted data words according to said predetermined coding scheme are respectively determined to be separated by at least said predetermined plurality, and by less than said predetermined plurality of bits of said complementary type.

Decimal number	Data Word $q_1 q_2 q_3 q_4$		12 Bits After Conversion $P_1 P_2 P_3 P_4 P_5 P_6 P_7 P_8 P_9 P_{10} P_{11} P_{12}$
0	0 0 0 0		0 0 0 0 0 1 0 0 0 0 0 0
1	0 0 0 1		0 0 0 0 0 0 1 0 0 0 0 0
2	0 0 1 0		0 0 0 0 0 0 0 1 0 0 0 0
3	0 0 1 1		0 0 0 0 0 0 0 0 1 0 0 0
4	0 1 0 0		0 1 0 0 0 0 0 0 0 0 0 0
5	0 1 0 1		0 0 0 0 1 0 0 0 0 0 0 0
6	0 1 1 0	Conversion	0 1 0 0 0 0 0 1 0 0 0 0
7	0 1 1 1	⟺	0 1 0 0 0 0 0 0 1 0 0 0
8	1 0 0 0		0 0 0 1 0 0 0 0 0 0 0 0
9	1 0 0 1		0 0 1 0 0 0 0 0 0 0 0 0
10	1 0 1 0		0 0 0 1 0 0 0 0 0 1 0 0
11	1 0 1 1		0 0 1 0 0 0 0 0 1 0 0 0
12	1 1 0 0		1 0 0 0 0 0 0 0 0 0 0 0
13	1 1 0 1		1 0 0 0 0 0 1 0 0 0 0 0
14	1 1 1 0		1 0 0 0 0 0 0 1 0 0 0 0
15	1 1 1 1		1 0 0 0 0 0 0 0 1 0 0 0

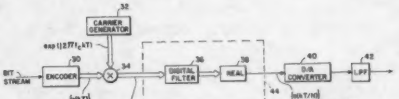


4,358,853

DIGITAL MODEM TRANSMITTER

Shahid U. H. Qureshi, Natick, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Jan. 22, 1981, Ser. No. 228,880
Int. Cl.³ H04B *1/04, 12/00*
U.S. Cl. 375—60 **21 Claims**



1. A data modulator for transmitting a first sequence of data symbols at a symbol rate of 1/T, said modulator being characterized as having a carrier frequency of f_c Hz and said data symbols being denoted x(kT), where x(kT) is a real or complex number and k is the time index of the kth symbol, comprising

modulated signal generating means for receiving said first sequence and generating, in response thereto and at said symbol rate, a second sequence of complex-valued signals y(kT) said signal y(kT) representing the complex number

$$y(kT)=x(kT)\cdot\exp(j2\pi f_c kT)$$

where $j=\sqrt{-1}$, and

filter means for receiving said second sequence and generating, in response thereto, a third sequence of real-valued signals, at a rate higher than said symbol rate, said third sequence representing linear combinations of the real and imaginary parts of said second sequence of complex-valued signals y(kT).

4,358,854

MEASURING DEVICES FOR X-RAY FLUORESCENCE ANALYSIS

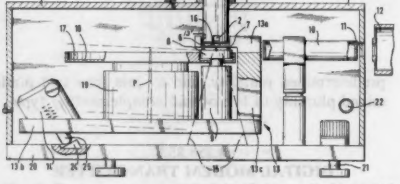
Rainer Marten; Herbert Rosomm, both of Geesthacht, and Heinrich Schwenke, Escheburg, all of Fed. Rep. of Germany, assignors to Gesellschaft für Kernenergieverwertung in Schiffbau und Schiffahrt mbH, Geesthact-Tesperhude, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 974,551, Dec. 29, 1978, abandoned, which is a continuation of Ser. No. 816,862, Jul. 18, 1977, abandoned. This application Dec. 10, 1980, Ser. No. 214,636

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 2632001

Int. Cl.³ G01M *23/22*

U.S. Cl. 378—45 **9 Claims**



1. An apparatus including carrier plates for fluorescence analysis of specimens comprising in combination: U-formed supporting and positioning means for a specimen carrier plate having a plane surface, including abutment means defining a plane for engaging the plane surface of the specimen carrier plate with the plane surface of said plate coincident with the plane defined by said abutment means, said abutment means being mounted for pivotal movement about a pivotal axis lying in said plane defined by said abutment means, a detector for detection of radiation having a detector axis perpendicular to said pivotal axis of said abutment means and passing through said plane defined by said abutment means, means for directing X-ray radiation along a radiation axis substantially perpendicular to said pivotal axis and to said detector axis to form a measuring region in which radiation is directed to said plane defined by said abutment means, pressure means to position said specimen carrier plate with its plane surface in engagement with said abutment means so that said plane surface and the plane defined by said abutment means coincide, and means to adjust said abutment means about said pivotal axis to vary the angle of said plane defined by said abutment means and the plane surface on said specimen carrier plate, so that said plane surface on said specimen carrier plate may be angularly adjusted precisely relative to said radiation axis.

4,358,855

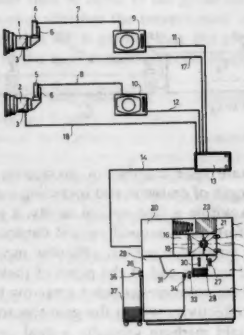
X-RAY PHOTOGRAPHING AND DEVELOPING APPARATUS

Karoly Szasz, and Sandor Meszaros, both of Budapest, Hungary, assignors to Medicor Muvek, Budapest, Hungary

Filed Aug. 6, 1980, Ser. No. 175,436

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—99 **4 Claims**



1. An X-ray system for medical diagnostic purposes, comprising:

a plurality of patient X-ray locations, each of said locations being provided with:

a picture amplifier disposed in the path of an X-ray beam adapted to pass through a patient;

a transmission camera operatively connected to said picture amplifier for generating a video signal representing a roentgenographic image of the patient, and

a video monitor connected to said camera for displaying a television image corresponding to said roentgenographic image;

a video distributor operatively connected to all of said cameras for selectively delivering the video signals from said cameras to an output of said distributors; and

a central photographing unit including:

a further video monitor connected to said output of said distributor for displaying a video image corresponding to the roentgenographic image of a selected camera,

a film supply and means for advancing unexposed photographic films in a focal plane spaced from said further video monitor and for advancing exposed photographic film from said plane to a storage space for the exposed film,

developing means continuously withdrawing exposed film from said space and chemically processing said exposed film to develop photographic images representing the successive video images of said further monitor and the corresponding roentgenographic images of said patients, and

an optical lens system including a shutter between said further monitor and said plane for exposing film in said plane to the video image of said further video monitor so as to form latent photographic images on said film.

4,358,856

MULTIAXIAL X-RAY APPARATUS

Paul M. Stivender, and David M. Barrett, both of Brookfield, Wis., assignors to General Electric Company

Filed Oct. 31, 1980, Ser. No. 202,094

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—167 **15 Claims**

1. X-ray apparatus for making angiographic examinations of a human body, comprising,

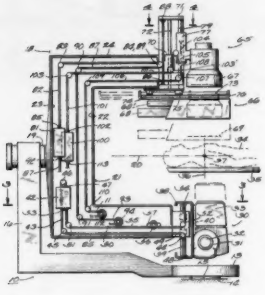
a support rotatable about a vertical axis,

a U-arm including a base section mounted to the support for rotation about a horizontal axis, said U-arm having leg sections extending from each of the opposite ends of said base section in substantial parallelism with each other and with the rotational axis of the base section,

the horizontal axis about which the U-arm rotates and the vertical axis about which the support rotates intersecting each other at a point designated as an isocenter at which said body would be located for angiography,

X-ray source means and means supporting said source means for moving substantially perpendicular to one of the axial extending leg sections and radially relative to said horizontal axis, said source means being arranged to project an x-ray beam along an axis that is coincident with the vertical axis and intersects said isocenter,

counterweight means and means coupling said counterweight means to said means for supporting said source means for moving jointly relative to said horizontal axis to counterbalance said source means and its supporting means in all of its radial positions,



a film changer and means supporting said changer for moving substantially perpendicular to the other of said U-arm leg sections and radially relative to said horizontal axis, and means for mounting said changer to said supporting means for moving axially between positions in which said changer is selectively in or out of alignment with said x-ray beam axis,

counterweight means and means coupling said counterweight means to said means for supporting said film changer for moving jointly relative to said horizontal axis to counterbalance said film changer and its supporting means in all of its radial positions,

an image intensifier and means supporting said intensifier for moving substantially perpendicular to said other of the U-arm leg sections and radially relative to said horizontal axis, and

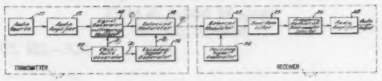
counterweight means and means coupling said counterweight means to said means for supporting said intensifier for moving jointly relative to said horizontal axis to counterbalance said intensifier and its supporting means in all of its radial positions.

4,358,857

COMMUNICATION SYSTEM

Joseph P. Gleason, Encino, and Harry G. Posthumus, Los Angeles, both of Calif., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed May 9, 1958, Ser. No. 735,089
Int. Cl.³ H04K *1/00*
U.S. Cl. 455—26 **5 Claims**



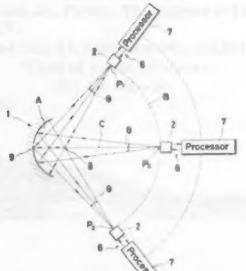
1. In combination, a first source for producing a first signal representative of intelligence to be transmitted from one point to another, a second source for producing a binary carrier signal having a first voltage level and a second voltage level, means responsive to the first signal and to the binary carrier signal for frequency-modulating the carrier signal in accordance with the first signal to produce a modulated intelligence signal having first and second voltage levels and exhibiting transitions between the same, a third source for producing a binary encoding signal having first and second voltage levels and exhibiting transitions between such levels in conformance with an apparently random predetermined sequence of variations in the encoding signal between the first and second voltage levels at different multiples of a particular time interval, and circuit means coupled to said modulating means and to said third source for inverting the voltage level of the encoding signal from the first voltage level to the second voltage level and from the second voltage level to the first voltage level and upon the simultaneous occurrence of the second voltage level in the intelligence signal, to produce an encoded intelligence signal.

4,358,858

OPTICAL INFORMATION EXCHANGE SYSTEM

Koichiro Tamura, Funabashi; Hiroaki Tajima, Musashino; Yoshikuni Okada, and Shinji Umeyama, both of Ibaragi, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,740
Claims priority, application Japan, Jun. 21, 1980, 55/84276
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—607 **3 Claims**

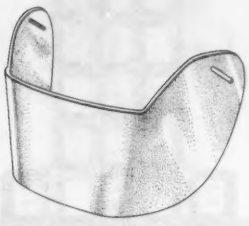


1. An optical information exchange system, comprising a cylindrical mirror and a plurality of optical transceivers disposed on a given curved plane confronting the mirror surface of said mirror with their optical axes pointing toward said mirror surface, an optical signal emitted from one of said plurality of optical transceivers being reflected by said mirror surface to fall incident upon the remaining transceivers serving as receivers.

DESIGNS

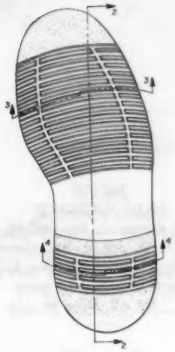
NOVEMBER 9, 1982

266,795
VISOR
Jan Grönborg, Fullerstavägen 42, S-141 44 Huddinge, Sweden
Filed Nov. 21, 1979, Ser. No. 96,291
Claims priority, application Sweden, Feb. 19, 1979, 79-0419
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—233

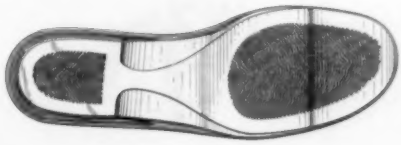


266,796
GOGGLES
Joseph Haslbeck, West Vancouver, Canada, assignor to Highland Mfg. Company Ltd., Burnaby, Canada
Filed Apr. 7, 1980, Ser. No. 138,020
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234

266,797
SHOE SOLE
James H. Lucarelli, Brownsville; Arthur W. Bowen, Quechee, both of Vt., and Malcolm G. Blissett, Grand Rapids, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 13, 1980, Ser. No. 177,548
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



266,798
SHOE BOTTOM
Joseph P. Famolare, Jr., Putney, Vt., assignor to Famolare, Inc., New York, N.Y.
Filed Dec. 15, 1980, Ser. No. 216,084
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

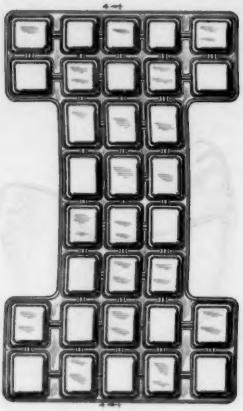


266,799
SKEIN HOLDER OR THE LIKE
Herbert F. Mace, 1608 Phillips Dr., Sanford, N.C. 27330
Filed Aug. 18, 1980, Ser. No. 178,724
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—23

266,800
BABY CARRIER
Cheryl J. Kula, 1322 Elmwood, Broomfield, Colo. 80020, and Linda S. Brunz, 3321 W. 4th St. Rd., Greeley, Colo. 80631
Filed Feb. 25, 1980, Ser. No. 123,983
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—31

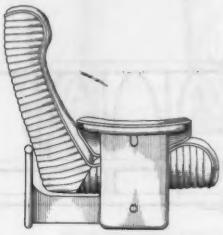
266,801
BAG
Joseph O. Cortese, 48 Ellerton Rd., and Stephen Donovan, 2 Ellerton Rd., both of Quincy, Mass. 02169
Filed Jan. 14, 1980, Ser. No. 111,766
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—41

266,802
INFANT CAR SEAT LINER
Elwyn R. Gooding, Ann Arbor, Mich., assignor to The Reagents of the University of Michigan, Ann Arbor, Mich.
Filed Oct. 24, 1980, Ser. No. 200,589
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—5



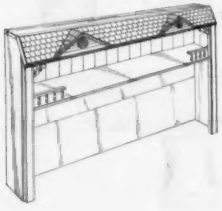
266,803
STOOL
Jeffrey R. Fear, 207 Queens Quay West, Toronto, Ontario, Canada
Filed May 10, 1978, Ser. No. 904,725
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30

266,804
SEAT
Otto W. Zapf, Ölmühlweg 35d 6240, Koenigstein, Fed. Rep. of Germany
Filed Aug. 24, 1979, Ser. No. 69,510
Claims pricrity, application Fed. Rep. of Germany, Feb. 26, 1979, 8 MR 245
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37

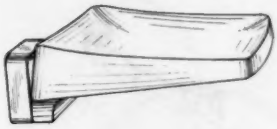


266,805
BED HEADBOARD OR SIMILAR ARTICLE
Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.
Filed Sep. 12, 1980, Ser. No. 186,808
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79

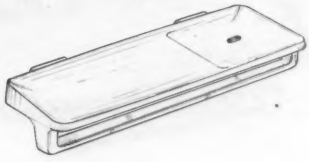
266,806
BED HEADBOARD OR SIMILAR ARTICLE
Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.
Filed Sep. 12, 1980, Ser. No. 186,818
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—80



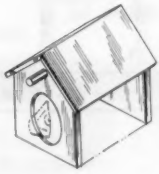
266,807
SOAP HOLDER
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 13, 1980, Ser. No. 121,233
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—90



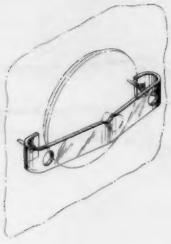
266,808
SHOWER SHELF
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 13, 1980, Ser. No. 121,236
Term of patent 14 years
Int. Cl. D23—*02*; D6—*04*
U.S. Cl. D6—91



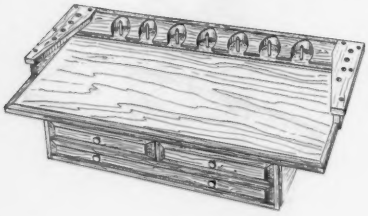
266,809
COVER FOR A TISSUE BOX
William Rodriguez, 147 Adamsville Rd., Bridgewater, N.J. 08807
Filed Aug. 1, 1980, Ser. No. 174,715
Term of patent 14 years
Int. Cl. D23—*02*; D30—*02*
U.S. Cl. D6—98



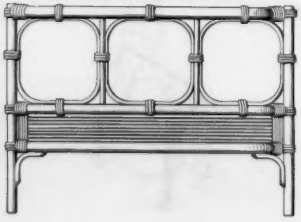
266,810
STORAGE BRACKET FOR A COOKING UTENSIL LID
Thomas E. Spath, 140 Amity St., Brooklyn, N.Y. 11201
Filed Mar. 16, 1981, Ser. No. 243,996
Term of patent 14 years
Int. Cl. D6—*06;* D8—*08*
U.S. Cl. D6—114



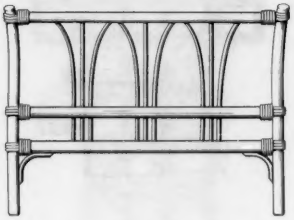
266,811
FLY TYING BENCH
Gary Saindon, 2307 Alpine Ct., Whitefish, Mont. 59937
Filed Oct. 2, 1980, Ser. No. 193,039
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—166



266,812
FURNITURE ARM FRAME OR SIMILAR ARTICLE
Kristin M. Welch, Conover, N.C., assignor to The Lane Company, Inc., Altavista, Va.
Filed Oct. 29, 1980, Ser. No. 201,976
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192

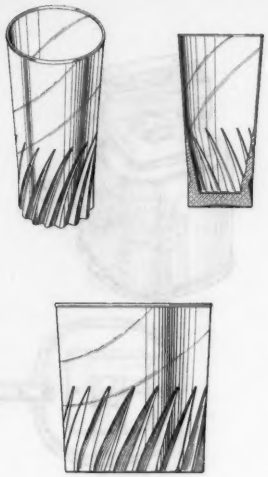


266,813
FURNITURE ARM FRAME OR SIMILAR ARTICLE
Kristin M. Welch, Conover, N.C., assignor to The Lane Company, Inc., Altavista, Va.
Filed Oct. 29, 1980, Ser. No. 201,977
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



266,814
MUG
Kenichi Myodo, Tsubame, Japan, assignor to Shinko Kinzoku Kabushiki Kaisha, Japan
Filed Dec. 13, 1979, Ser. No. 103,299
Claims priority, application Japan, Jul. 18, 1979, 54-030153
The portion of the term of this patent subsequent to May 25, 1989, has been disclaimed.
Term of patent 7 years
Int. Cl. D7—*01*
U.S. Cl. D7—9

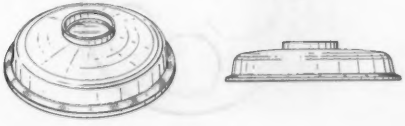
266,815
TUMBLER OR SIMILAR ARTICLE
Jean-Jacques Durand, LaGarenne, 62510 Arques, France
Filed Apr. 3, 1980, Ser. No. 136,760
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—14



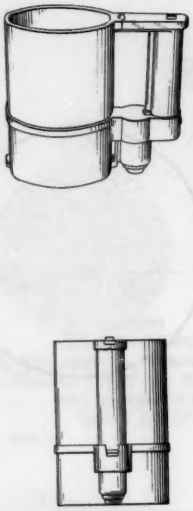
266,816
TACO PLATE
Cheri L. Schupp, 5013 Hillcrest Ct., Plainfield, Ind. 46168
Filed Nov. 28, 1980, Ser. No. 211,253
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—27

266,817
DINNER PLATE OR SIMILAR ARTICLE
David P. G. Williams, Englewood, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Sep. 26, 1980, Ser. No. 191,081
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—35

266,818
BOWL COVER
Edgar F. Trombly, Grosse Pointe Farms, Mich., assignor to Thermo Serv, Inc., Anoka, Minn.
Filed Oct. 8, 1980, Ser. No. 195,042
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—40

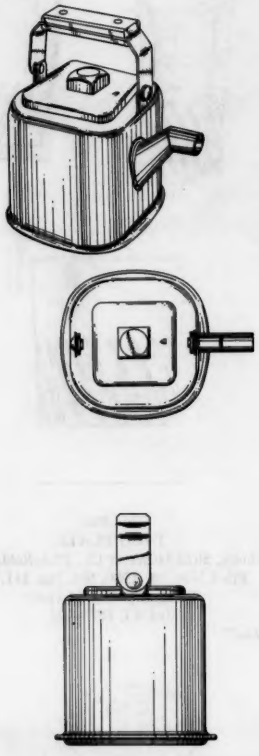


266,819
FLOUR SIFTER
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Sep. 19, 1980, Ser. No. 188,956
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—47



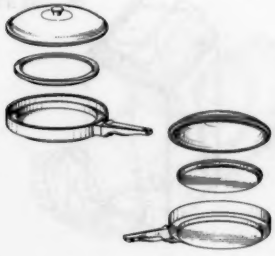
266,820
SPAGHETTI MEASURING DEVICE
Kenneth Ferrin, East Hampton, N.Y., assignor to East Hampton Industries, Inc., East Hampton, N.Y.
Filed Dec. 15, 1980, Ser. No. 216,122
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D7—50

266,821
TEA KETTLE OR SIMILAR ARTICLE
Joy Christov Urich, 1133 Park Ave., New York, N.Y. 10028
Filed Sep. 23, 1980, Ser. No. 190,525
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—320



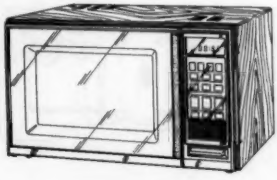
266,822
PORTABLE COOLER
Richard H. Seager, Mystic, Conn., assignor to King-Seeley Thermos Co., Norwich, Conn.
Filed Nov. 14, 1980, Ser. No. 207,030
Term of patent 14 years
Int. Cl. D07—*07*
U.S. Cl. D7—77

266,823
STEAM-FRY WATERLESS COOKER
LeRoy Martens, 201 S. Payne, New Ulm, Minn. 56073
Filed Apr. 4, 1980, Ser. No. 137,407
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—356

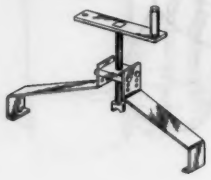


266,824
GARLIC PRESS
David P. Harris, 2523 S. Acoma, Denver, Colo. 80223
Filed Dec. 11, 1980, Ser. No. 215,455
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—101

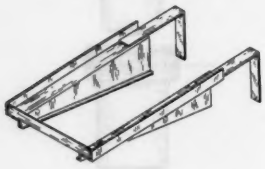
266,825
MICRO-WAVE OVEN
Masamichi Yamamura, Osaka; Toshio Harada, and Michio Tanaka, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 18, 1980, Ser. No. 217,883
Claims priority, application Japan, Jul. 3, 1980, 55-26649
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351



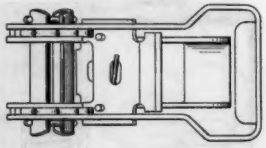
266,826
AIRCRAFT LANDING GEAR SERVICING TOOL
Jack McHaney, Jacksonville, Fla., assignor to Lockheed Corporation, Burbank, Calif.
Filed Aug. 12, 1980, Ser. No. 177,436
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



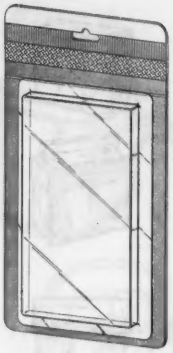
266,827
MOUNTING BRACKET
Larry J. Withrow, Xenia, Ohio, assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed May 5, 1980, Ser. No. 146,811
Term of patent 14 years
Int. Cl. D6—*04;* D8—*08*
U.S. Cl. D8—373



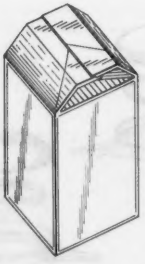
266,828
RATCHET BUCKLE FOR TIGHTENING STRAP
Ernest Prete, Jr., Woodland Hills, Calif., assignor to Ancra Corporation, El Segundo, Calif.
Filed Sep. 2, 1980, Ser. No. 183,179
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—383



266,829
PACKAGING CONTAINER
Keiichi Yoshizawa, and Noboru Uemura, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Apr. 10, 1978, Ser. No. 895,293
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415

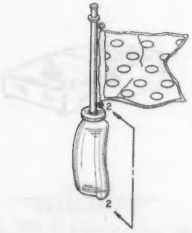


266,830
DISPENSING CONTAINER OR SIMILAR ARTICLE
Harry B. Egleston, 9127 Merrill, Whitmore Lake, Mich. 48189
Filed Oct. 27, 1980, Ser. No. 200,787
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—416

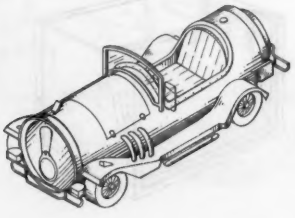


266,831
WRISTWATCH
Kaoru Iida, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Jan. 11, 1980, Ser. No. 111,431
Claims priority, application Japan, Aug. 15, 1979, 54-34161
Term of patent 7 years
Int. Cl. D10—*02*
U.S. Cl. D10—38

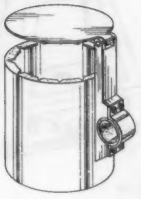
266,832
GOLF FLAG OR SIMILAR ARTICLE
Bobby Brown, 453 Fuller St., Shreveport, La. 71108
Filed Jan. 14, 1980, Ser. No. 111,835
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—166



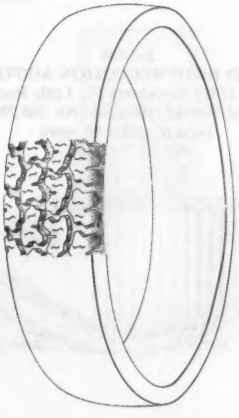
266,833
ADVERTISING VEHICLE
Ronald Wharton, Rte. 1, Turnbull Bay Rd., New Smyrna Beach, Fla. 32069
Filed Apr. 23, 1980, Ser. No. 143,157
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—83



266,834
COMBINED HANDLEBAR MOUNTED CAN HOLDER AND LID
Herman L. Sinkhorn, King City, Mo. 64463, and George T. Sinkhorn, Rte. 1 Box 1B, Mound City, Mo. 64470
Filed Jul. 14, 1980, Ser. No. 168,588
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114

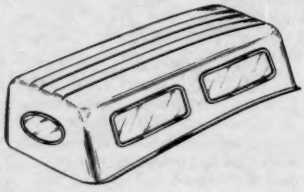


266,835
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Grosse Pointe Farms, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 18, 1979, Ser. No. 40,378
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

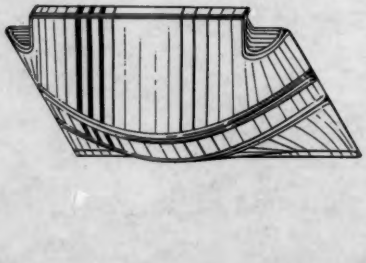


266,836
TIE DOWN BRACKET FOR A LUGGAGE RACK
Charles E. Ingram, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.
Filed Sep. 5, 1978, Ser. No. 939,905
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157

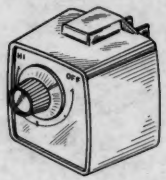
266,837
ANTI-FRICTION SHIELD FOR A TRACTOR ROOF
Freeman A. Treadway, 1801 Avondale Dr., Altavista, Va. 24517, and David S. Goodman, Box 330, Rte. 1, Goode, Va. 24556
Filed Jul. 21, 1980, Ser. No. 170,822
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



266,838
WIND DRAG REDUCTION AIRFOIL
Gary F. Himes, 13015 Blackberry Pl., Little Rock, Ark. 72209
Filed Nov. 10, 1980, Ser. No. 205,798
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181

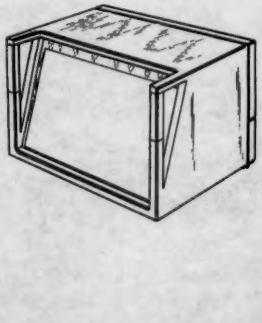


266,839
REMOTE SPEED CONTROL UNIT FOR A FIREPLACE BLOWER MOTOR
Charles W. McVey, 9810 Cutts Rd., Chardon, Ohio 44024
Filed May 19, 1980, Ser. No. 151,343
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32

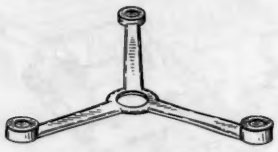


266,840
ELECTRONIC APPARATUS
Charles A. Ross, and Jerry L. Schell, both c/o Keas Electronics, 210 W. Main St., Chanute, Kans. 66720
Filed Dec. 26, 1978, Ser. No. 973,545
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—40

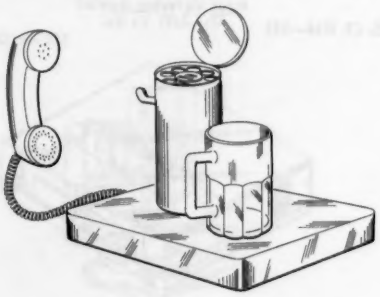
266,841
CONTROL CONSOLE
Constantine Vintzel, Brighton, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Apr. 9, 1981, Ser. No. 252,639
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—40



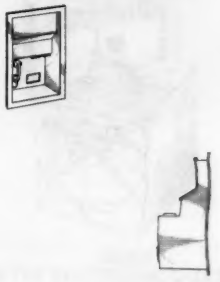
266,842
PHONOGRAPH RECORD SPACER
Mark W. Villers, 3033 Mattson Pl., and Dan Tobiska, Rte. 1 Box 608, both of Coos Bay, Oreg. 97420
Filed Jun. 27, 1980, Ser. No. 163,805
Term of patent 14 years
Int. Cl. D14—*01, 99*
U.S. Cl. D14—25



266,843
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jan. 15, 1980, Ser. No. 112,308
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



266,844
WALL MOUNTED COMMUNICATIONS MODULE FOR AN AUTOMATED TELLER
Ernest F. J. Prinzhorn, Pasadena, Calif., assignor to QRS Corporation, Los Angeles, Calif.
Filed Nov. 7, 1980, Ser. No. 205,018
Term of patent 14 years
Int. Cl. D14—*03, 02*
U.S. Cl. D14—61



266,845
DIALING PAD FOR A CAR TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 16, 1980, Ser. No. 159,851
Claims priority, application Japan, Dec. 28, 1979, 54-055049
Term of patent 14 years
Int. Cl. D14—*03;* D18—*01*
U.S. Cl. D14—66

266,846

RADIO

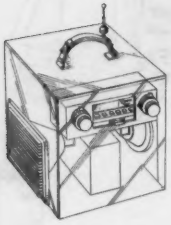
Joseph F. Hills, Scottsdale, Ariz., assignor to Jimmy's Radio & Television Corp., Phoenix, Ariz.

Filed Dec. 5, 1979, Ser. No. 100,472

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—70



266,847

RADIO CABINET OR SIMILAR ARTICLE

Michael J. McGourty, Eindhoven, Netherlands, assignor to PYE (Electronic Products) Limited, Cambridge, England

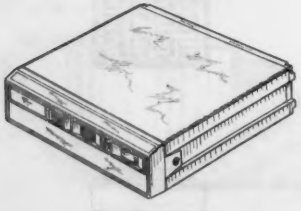
Filed Dec. 17, 1979, Ser. No. 104,203

Claims priority, application United Kingdom, Jun. 19, 1979, 990345

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—71



266,848

COMPUTER

Richard J. Dickinson, Cambridge, England, assignor to Sinclair Research Limited, Cambridge, England

Filed Aug. 14, 1980, Ser. No. 178,374

Claims priority, application United Kingdom, Feb. 14, 1980, 993641

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—100

266,849

IMPACT PRINTER OR THE LIKE

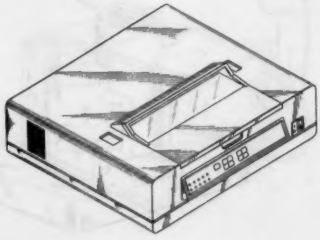
Herbert E. Meister, Jr.; Harville M. Parks, both of Austin, and James R. Taylor, Manor, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,551

Term of patent 14 years

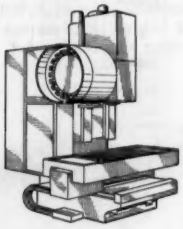
Int. Cl. D14—*02*

U.S. Cl. D14—111



266,850
HIGHWAY MAINTENANCE VEHICLE
Gary L. Godbersen, Ida Grove, Iowa, assignor to Gomaco, Inc., Ida Grove, Iowa
Filed Jul. 19, 1979, Ser. No. 58,955
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—22

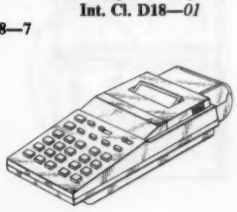
266,851
MACHINING CENTER
Ryuji Wada, Nagoya; Kenichi Munekata, Kariya; Yoshio Shima, Ohbu; Fumihiko Okoshi; Yoji Kamiya, both of Anjo; Toshifumi Hasegawa, Kariya, and Norikazu Kanii, Chita, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
Filed Apr. 22, 1980, Ser. No. 142,844
Claims priority, application Japan, Oct. 29, 1979, 54-45487
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—122



266,852
ORGAN
Thomas S. Scott, Cincinnati, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio
Filed Jan. 5, 1981, Ser. No. 222,911
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—6

266,853
DESK-TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Abiko, and Tsutomu Okuyama, Kawaguchi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 16, 1980, Ser. No. 169,382
Claims priority, application Japan, Jan. 28, 1980, 55-2298
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

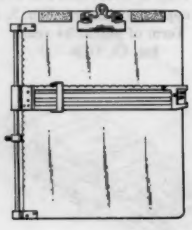
266,854
DESK-TOP ELECTRONIC CALCULATOR
Takashi Hirata, Yokohama, and Hideo Fushimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 6, 1980, Ser. No. 175,875
Claims priority, application Japan, Feb. 8, 1980, 55-4515
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



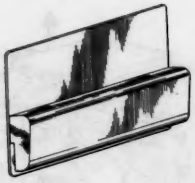
266,855
ELECTRONIC CALCULATOR WITH THERMOMETER AND TIMER
Eiichi Yoshioka, Abiko, and Osamu Murakami, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 10, 1980, Ser. No. 185,946
Claims priority, application Japan, Mar. 24, 1980, 55-11354
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

266,856
PEN CAP OR SIMILAR ARTICLE
Shigeo Oka, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha d.b.a. Pentel Co., Ltd., Japan
Filed Nov. 3, 1980, Ser. No. 203,516
Claims priority, application Japan, May 9, 1980, 55-18229
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—57

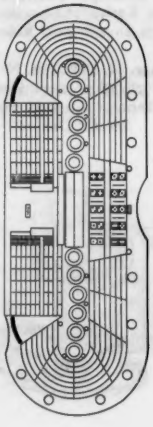
266,857
WRITING GUIDE
James C. Greenlees, 399 Asharoken Ave., Northport, N.Y. 11768
Filed Sep. 22, 1980, Ser. No. 189,780
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—88



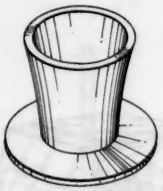
266,858
MESSAGE CLIP
H. Randall Cole, Powder Springs, Ga., assignor to Apco Graphics, Inc., Atlanta, Ga.
Filed Nov. 12, 1980, Ser. No. 206,039
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—90



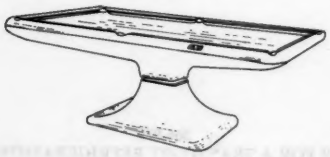
266,859
GAME LAYOUT MAT
Berislav C. M. Skender, Reno, Nev., assignor to Barboot, Reno, Nev.; Charles W. Baker, Sacramento, Calif. and Betty L. Mesin, Farrell, Pa.
Filed May 3, 1979, Ser. No. 35,550
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—37



266,860
FLANGED GOLF TEE COLLAR
Ted P. Nelson, 18229 - 36th Place South, Seattle, Wash. 98188
Filed Oct. 22, 1979, Ser. No. 86,726
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—208

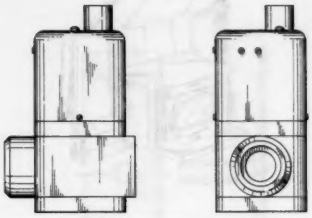


266,861
BILLIARD TABLE
Aron J. Clarkson, Unit 2, 389 Balwyn Rd., North Balwyn, 3104, Victoria, Australia
Filed Jul. 29, 1980, Ser. No. 173,334
Claims priority, application Australia, Jan. 29, 1980, 80108
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—232



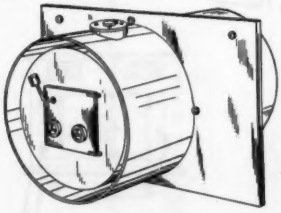
266,862
FISHING ROD HANDLE
John E. Vance, 11030 N. 85th Pl., Scottsdale, Ariz. 85260
Filed Apr. 14, 1980, Ser. No. 139,860
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

266,863
SOLENOID VALVE
Jimmie L. Mason, Crestline, Calif., assignor to Total Flood Corporation, Blue Springs, Mo.
Filed Feb. 27, 1980, Ser. No. 125,029
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

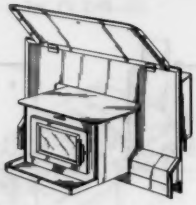


266,864
WATER VALVE FOR A CARPET CLEANER OR THE LIKE
Carl Parise, Reno, and Rainer R. Schulz, Sparks, both of Nev., assignors to Parise & Sons, Inc., Sparks, Nev.
Filed Jun. 18, 1980, Ser. No. 160,413
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

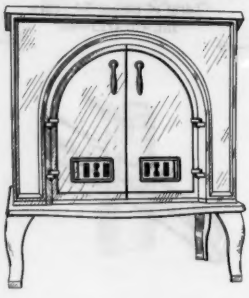
266,865
FIREPLACE STOVE
Harold W. Pierce, 4018 Highpoint Rd., Ellicott City, Md. 21043
Filed Jul. 26, 1979, Ser. No. 31,838
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



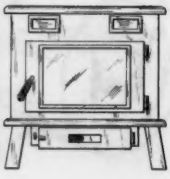
266,866
FIREPLACE INSERT
William Z. Penland, 8900 Saunders Land, Bethesda, Md. 20034
Filed Mar. 23, 1981, Ser. No. 246,593
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94



266,867
WOOD BURNING STOVE
John N. Brice, Mercer Island, Wash., assignor to Dutch West India, Ltd., Seattle, Wash.
Filed Jan. 21, 1980, Ser. No. 113,488
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

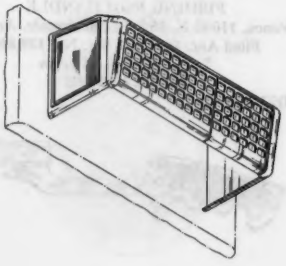


266,868
STOVE
Richard A. Russo, Holbrook, Mass., assignor to Russo Manufacturing Corp., Randolph, Mass.
Filed Jan. 14, 1980, Ser. No. 130,425
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



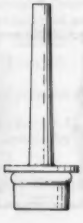
266,869
STOVE
Douglas F. Edwards, and Robert R. Mountain, Jr., both of Mount Vernon, Ohio, assignors to The J. B. Foote Foundry Co., Fredericktown, Ohio
Filed Dec. 15, 1980, Ser. No. 216,090
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

266,870
COVER FOR A TRANSPORT REFRIGERATION UNIT
Peter B. Allard, Minnetonka; William F. Arendt, Burnsville, and Rodney H. Volk, Eden Prairie, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.
Filed Jul. 22, 1980, Ser. No. 170,510
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—142

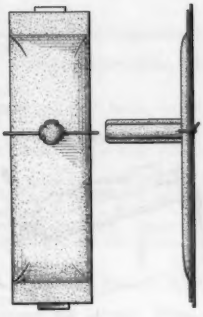


266,871
TEAT DILATOR
Francis W. Child, 1307 Southfork, Star Rte., Cody, Wyo. 82414
Filed Nov. 6, 1980, Ser. No. 184,731
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—23

266,872
VETERINARY HYPODERMIC SYRINGE TIP OR SIMILAR ARTICLE
Mark L. Anderson, R.R. 2, Elmwood, Wis. 54740
Filed Nov. 13, 1978, Ser. No. 960,129
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—25

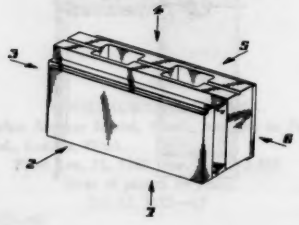


266,873
FEMININE HYGIENE APPLIANCE
Edwin H. Riedell, 56627 Kismet Rd., Yucca Valley, Calif. 92284
Filed Aug. 12, 1980, Ser. No. 177,720
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—51

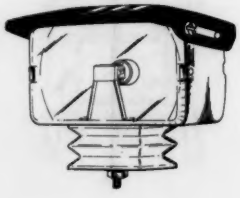


266,874
PIPETTE
Elmer F. St. Amand, 12744 Kahlenberg La., North Hollywood, Calif. 91607
Filed Jun. 13, 1980, Ser. No. 159,185
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—55

266,875
BUILDING BLOCK
Jose C. dos Santos, Estrada dos Arneiros, 46-1° Dto., Lisbon, Portugal
Filed Sep. 17, 1980, Ser. No. 187,987
Claims priority, application Portugal, Mar. 25, 1980, 15,049
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



266,876
AUTOMOBILE AUXILIARY LIGHT
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1980, Ser. No. 161,397
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28

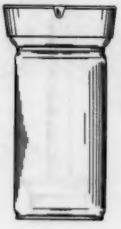


266,877
OIL LAMP
William J. Wheeler, 2615 W. Naranja, Mesa, Ariz. 85202
Filed Jul. 12, 1978, Ser. No. 923,922
Term of patent 14 years
Int. Cl. D26—*02, 03*
U.S. Cl. D26—40

266,878
LAMP
Carlo S. Bessone, Woburn, and William J. Roche, Merrimac, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Dec. 28, 1979, Ser. No. 108,183
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—93

ate.

266,879
ASHTRAY
Donald L. Pastirik, 2460 Perry St., Munhall, Pa. 15120
Filed Sep. 24, 1980, Ser. No. 190,365
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—27



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF NOVEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See—*
Lo, Young S.; and Munson, Harry R., Jr., 4,358,599, Cl. 548-356.000.

A-T-O Inc.: *See—*
Long, Charles N., 4,357,787, Cl. 53-317.000.

AB Wilh. Becker: *See—*
Ahlm, Lars G. W., 4,357,725, Cl. 5-468.000.

Abbott, John, to Coal Industry (Patents) Limited. Controlling the treatment of mixtures comprising solid and liquid. 4,358,827, Cl. 364-500.000.

Abe, Fumiyoshi, to Sony Corporation. DC Motor driving circuit. 4,358,720, Cl. 318-254.000.

Abe, Yoshihiko, to Mitsubishi Steel Mfg. Co., Ltd. Materials for a bit. 4,358,317, Cl. 75-126.00C.

Abele, Werner, to Du Pont de Nemours, E. I., and Company. Photosensitive reproduction elements for forming negative tonable images. 4,358,529, Cl. 430-270.000.

Abex Corporation: *See—*
Farr, Aaron V., 4,358,721, Cl. 318-604.000.

Adamovske strojirny, narodni podnik: *See—*
Janecek, Jaroslav; Jiruse, Jaroslav; and Rozsypal, Josef, 4,358,101, Cl. 271-12.000.

Adams, James A.; and Ravinski, Paul P. Apparatus for sharpening a combination saw blade. 4,357,842, Cl. 76-41.000.

Adams, Patrick J. Quick-detachable sectional ski. 4,358,130, Cl. 280-603.000.

Adhesives Research, Inc.: *See—*
Green, Alfred J., 4,358,489, Cl. 428-31.000.

Advanced Circuit Technology Inc.: *See—*
Ostman, Barry I., 4,357,750, Cl. 29-847.000.

Aeschbach, Hermann A., to Process Engineering Company SA. Method for the production of fermentation vinegar. 4,358,463, Cl. 426-17.000.

AGA Aktiebolag: *See—*
Wiklund, Klas R.; and Ericsson, Lars, 4,357,833, Cl. 73-490.000.

Agence Centrale de Services (ACDS): *See—*
Morel, Pierre A. A. A.; and Pittavino, Marc P. L., 4,358,756, Cl. 340-539.000.

Agency of Industrial Science & Technology: *See—*
Tamura, Koichiro; Tajima, Hiroaki; Okada, Yoshikuni; and Umeyama, Shinji, 4,358,858, Cl. 455-607.000.

AGFA-Gevaert AG: *See—*
Stemme, Otto; Staudacher, Frank; Lermann, Peter; Wagensonner, Eduard; and Schultheiss, Karl-Heinz, 4,358,805, Cl. 360-106.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
von Konig, Anita; Moll, Franz; and Rosenhahn, Lothar, 4,358,531, Cl. 430-434.000.

Agri Environment Systems, Inc.: *See—*
Kuipers, John H., 4,358,496, Cl. 428-72.000.

Ahlm, Lars G. W., to AB Wilh. Becker. Body-support devices. 4,357,725, Cl. 5-468.000.

Air Products and Chemicals, Inc.: *See—*
Klosek, Joseph; and Tao, John C., 4,358,364, Cl. 208-92.000.
Papinsick, John; Oransky, John J.; and Sircar, Shivaji, 4,358,111, Cl. 273-61.00R.

Aisin Seiki Kabushiki Kaisha: *See—*
Hori, Takanobu; and Yoshida, Motoharu, 4,357,913, Cl. 123-41.490.

Akagami, Akira: *See—*
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akiro; Katayama, Shitomi; and Nomura, Suguru, 4,358,507, Cl. 428-429.000.

Akimoto, Mamoru; Konno, Kazushi; and Hagyu, Toshimasa, to Fuji Electric Co., Ltd. Electrical contact manufacturing method and apparatus. 4,357,751, Cl. 29-879.000.

Akimoto, Saburo; Maruchi, Sachio; Fukaya, Masahiro; Shibano, Tomishi; Chimura, Ippei; Asakura, Hiroshi; Kitazume, Keisuke; and Fuse, Shiro, to Sanyo-Kokusaku Pulp Co.; and Toyo Chemical Co., Ltd. Process for the preparation of paper-backed adhesive tapes of the pressure-sensitive type. 4,358,494, Cl. 428-40.000.

Aktiebolaget SKF: *See—*
Hallerback, Stig L., 4,358,692, Cl. 310-42.000.

Akzo N.V.: *See—*
Noomen, Arie; Mostert, Johannes; and Wolters, Egbert, 4,358,477, Cl. 427-54.100.

Albarella, James P.; Carrico, Robert J.; and Li, Thomas M., to Miles Laboratories, Inc. N-Aminoalkyl iodothyronine derivatives. 4,358,604, Cl. 560-40.000.

Albert, Ernst: *See—*
Blaurock, Gunther; Albert, Ernst; and Altrock, Horst, 4,357,838, Cl. 74-424.80R.

Alden, John M.; and Williams, George C., to Alden Research Foundation. Adjustable blade for facsimile recording machine. 4,358,778, Cl. 346-101.000.

Alden Research Foundation: *See—*
Alden, John M.; and Williams, George C., 4,358,778, Cl. 346-101.000.

Aldinger, Fritz: *See—*
Sperner, Franz; Aldinger, Fritz; and Zwergel, Wilhelm, 4,358,663, Cl. 219-270.000.

Aleksandrow, Jerry. Low energy ice making apparatus. 4,357,807, Cl. 62-228.000.

Alfa-Laval AB: *See—*
Thorsson, Conny R.; and Viira, Indrek J., 4,358,536, Cl. 435-161.000.

Alford, Harvey E.; and Rightmire, Robert A., to Standard Oil Company (Ohio). Catalytic hydrocoking of residua. 4,358,366, Cl. 208-112.000.

Alheid, Robert J., to Beloit Corporation. Method for high speed size application. 4,358,484, Cl. 427-296.000.

Allec, Josiane: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,358,286, Cl. 8-405.000.

Allen, Esther L.: *See—*
Allen, William B.; and Allen, Esther L., 4,357,755, Cl. 33-180.00R.

Allen Organ Company: *See—*
Markowitz, Jerome; and Schenck, Thomas M., 4,357,851, Cl. 84-1.010.

Allen, William B.; and Allen, Esther L. Column pad layout device, anchor bolt layout device, and layout methods. 4,357,755, Cl. 33-180.00R.

Allied Corporation: *See—*
Sifniades, Stylianos; Tunick, Allen A.; and Koff, Fred W., 4,358,618, Cl. 568-385.000.
Wood, Stanley D., 4,358,375, Cl. 210-266.000.

Alpegiani, Marco: *See—*
Perrone, Ettore; Nannini, Giuliano; Alpegiani, Marco; Giudici, Franco; and Meinardi, Giuseppe, 4,358,448, Cl. 424-246.000.

Alsthom-Altantique: *See—*
Carton, Jean, 4,358,685, Cl. 250-475.200.

Altex Scientific, Inc.: *See—*
Filgas, Ludovic S., Jr.; and Magnussen, Haakon T., Jr., 4,358,712, Cl. 315-243.000.

Altrock, Horst: *See—*
Blaurock, Gunther; Albert, Ernst; and Altrock, Horst, 4,357,838, Cl. 74-424.80R.

Amada Company, Limited: *See—*
Sakurai, Nobuo; and Moriya, Kikuo, 4,357,848, Cl. 83-801.000.

Amberg, Stephen W., to Owens-Illinois, Inc. Method and apparatus for assembling tubular sleeve preforms and containers. 4,357,788, Cl. 53-585.000.

Amco Manufacturing Corporation: *See—*
Heideman, Robert C., 4,358,037, Cl. 224-321.000.

Ameen, Joseph G.; Joseph, Charles A.; Rivenburgh, Dennis L.; and Sissenstein, David W., to International Business Machines Corporation. Reducing chloride concentration. 4,358,627, Cl. 570-238.000.

Amerace Corporation: *See—*
Trimmer, Paul A., 4,357,726, Cl. 10-86.00A.

American Cyanamid Co.: *See—*
Brown, Dale G., 4,358,607, Cl. 562-405.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,358,605, Cl. 560-121.000.

American Filtrona Corporation: *See—*
Berger, Richard M., 4,357,950, Cl. 131-338.000.

Ames, William A., to Eastman Kodak Company. Process for controlling the viscosity during the preparation of grafted polyethylene and ethylene/alpha olefin waxes. 4,358,564, Cl. 525-261.000.

Amick, Edward W.; and Pelley, Paul W. Modular sign support. 4,357,772, Cl. 40-605.000.

AMP Incorporated: *See—*
Beinhauer, Ernest L., 4,358,417, Cl. 264-36.000.

Anabuki, Mitsugu: *See—*
Yoshii, Masataka; Anabuki, Mitsugu; Kuwabara, Tatsuro; Obana, Yasuo; and Kono, Takuo, 4,358,313, Cl. 75-60.000.

Ancos Co., Ltd.: *See—*
Hashimoto, Yasuyuki; and Torii, Osamu, 4,358,210, Cl. 401-65.000.

Anderl, Peter: *See—*
Steigerwald, Karl-Heinz; Anderl, Peter; Kappelsberger, Erwin; Monch, Clauspeter; Konig, Dieter; and Scheffels, Wilheim, 4,358,657, Cl. 219-121.0EN.

Anderson, Carl M., to Hesston Corporation. Bucket assembly for tractors. 4,358,241, Cl. 414-703.000.

Anderson, Douglas E. Stabilized, variable buoyancy apparatus. 4,357,890, Cl. 114-123.000.

Anderson, Ingvar G.: *See—*
Mackenzie, Harold B.; and Anderson, Ingvar G., 4,358,237, Cl. 414-300.000.

Anderson, John W., Jr.: *See—*
Roche, William J.; and Anderson, John W., Jr., 4,358,701, Cl. 313-197.000.

Anderson, Robert A.: *See—*
Price, Anthony G.; and Anderson, Robert A., 4,358,002, Cl. 188-71.900.

Andis Company: *See—*
Andis, Matthew L., 4,358,660, Cl. 219-222.000.

Andis, Matthew L., to Andis Company. Collapsible electric hair curling iron. 4,358,660, Cl. 219-222.000.

Ando, Yujiro, to Canon Kabushiki Kaisha. Corona discharger. 4,358,681, Cl. 250-324.000.

Andrus, Ronald L.; Chyung, Kenneth; Reade, Richard F., deceased; and by Reade, Clara M., administratrix, to Corning Glass Works. Glass-ceramic coatings for use on metal substrates. 4,358,541, Cl. 501-5.000.

Ansaldo Societa per Azioni: *See—*
Primo, Luigi, 4,357,846, Cl. 82-1.500.

Anselmann, Hans; and Mayer, Kurt, to Bopp & Reuther GmbH. Safety valve with vibration-damped valve spring. 4,357,956, Cl. 137-514.000.

Anstett, David N.; Volkert, Egbert W.; and Schryer, Richard F., to Jeno's, Inc. Apparatus for the continuous production of fried dough crusts. 4,357,862, Cl. 99-355.000.

Antoine, Jacquet-Maurice, to Societe Anonyme Francaise du Ferodo. Positioning devices. 4,358,166, Cl. 308-26.000.

Antonov, Evgeny A.; Matveev, Anatoly S.; Nikonov, Nikolai I.; Leonov, Boris N.; Razhev, Anatoly V.; and Prokofiev, Vyacheslav I. Method of producing hollow articles by deep drawing and press for effecting same. 4,357,816, Cl. 72-57.000.

Antonov, Oleg K. Anti-icing device for aerodynamic structures of aircraft. 4,358,075, Cl. 244-134.00R.

Antos, George J., to UOP Inc. Activated multimetallic catalytic composite. 4,358,399, Cl. 252-441.000.

Aosai, Fumito: *See—*
Tanaka, Hiroyuki; Aosai, Fumito; Kido, Koichiro; and Yamamoto, Shogo, 4,358,508, Cl. 428-458.000.

Aoyagi, Takaaki: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; Kondo, Shinichi; and Ishizuka, Masaaki, 4,358,602, Cl. 549-328.000.

Aoyama, Shunichi, to Nissan Motor Company, Limited. Variable valve timing system for induction control of an internal combustion engine. 4,357,917, Cl. 123-90.160.

Arai, Yoshihiro, to Fuji Photo Film Co., Ltd. Magnetic recording and reproducing method and magnetic recording medium therefor. 4,358,806, Cl. 360-119.000.

Arakawa, Tatsumi: *See—*
Takasuka, Kaoru; Arakawa, Tatsumi; Matushita, Fumio; and Kobayashi, Hidehiko, 4,358,782, Cl. 357-2.000.

Arbed S.A.: *See—*
Glaesener, Ernest, 4,358,090, Cl. 256-13.100.

Archie, William C., Jr.: *See—*
Mooberry, Jared B.; and Archie, William C., Jr., 4,358,525, Cl. 430-217.000.

Aricco, Ronald A. Frosting or tipping cap for varying intensity of treatment. 4,357,951, Cl. 132-9.000.

Arlt, Dieter: *See—*
Jautelat, Manfred; and Arlt, Dieter, 4,358,598, Cl. 548-216.000.

Arms, John T.: *See—*
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,358,396, Cl. 252-430.000.

Armstrong, Brian M.: *See—*
Stewart, James A. C.; Armstrong, Brian M.; Gamble, Harold S.; Mallon, John; Monds, Fabian C.; Ryan, William D.; and Wakefield, James, 4,358,759, Cl. 340-554.000.

Arnold, Bruce K.; and Schwartz, Lawrence. Bayonet coupling for electrical connector. 4,358,176, Cl. 339-88.00R.

Aronovici, Adolfo S. Method of manufacture of layered film including layers having crossed directions of molecular orientation. 4,358,330, Cl. 156-244.140.

Arremann, Hans, to Siemens Aktiengesellschaft. D-C Regulator circuit. 4,358,811, Cl. 361-100.000.

Arvey Corporation: *See—*
Hirsch, Arthur, 4,358,015, Cl. 206-439.000.

Asahi Glass Company, Ltd.: *See—*
Igarashi, Hitoshi, 4,358,044, Cl. 228-1.00R.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Iida, Kiichi; Kawamoto, Tadashi; and Miyoshi, Kazuhito, 4,358,354, Cl. 204-159.150.
Naomi, Yamaguchi; Kohji, Noguchi; and Kazuo, Tsuzura, 4,358,546, Cl. 521-32.000.
Takasuka, Kaoru; Arakawa, Tatsumi; Matushita, Fumio; and Kobayashi, Hidehiko, 4,358,782, Cl. 357-2.000.

Asakura, Hiroshi: *See—*
Akimoto, Saburo; Maruchi, Sachio; Fukaya, Masahiro; Shibano, Tomishi; Chimura, Ippei; Asakura, Hiroshi; Kitazume, Keisuke; and Fuse, Shiro, 4,358,494, Cl. 428-40.000.

Asano, Masaharu, to Nissan Motor Co., Ltd. Engine controlling device. 4,357,918, Cl. 123-425.000.

ASARCO Incorporated: *See—*
Shaw, Ian M.; and Stack, William R., 4,358,422, Cl. 420-577.000.

ASEA Aktiebolag: *See—*
Sandberg, Lennart, 4,358,819, Cl. 363-68.000.

Asp, Hans E. Method of cleaning a filter surface in situ in a pressure filtering apparatus for liquids and pressure filtering apparatus for carrying out the method. 4,358,383, Cl. 210-771.000.

Astro Safety Products Inc.: *See—*
Lipoma, Phillip C., 4,358,679, Cl. 250-252.100.

Asulab S.A.: *See—*
Cognard, Jacques; and Phan, Trung H., 4,358,392, Cl. 252-299.100.

Atkinson, Joseph G.; Baldwin, John J.; and McClure, David E., to Merck & Co., Inc. Aralkylamindethanol heterocyclic compounds. 4,358,455, Cl. 424-263.000.

Auborn, James J.: *See—*
Proud, Joseph M.; Auborn, James J.; and Bessett, Richard A., 4,358,641, Cl. 179-113.000.

Audeh, Costandi A.: *See—*
Yan, Tsoung Y.; and Audeh, Costandi A., 4,358,554, Cl. 524-69.000.

Aupac Kabushiki Kaisha: *See—*
Yoshida, Makoto; and Baba, Satoru, 4,358,319, Cl. 75-200.000.

Austin, Oliver K., to Phillips Petroleum Company. Method and apparatus for producing carbon black. 4,358,289, Cl. 23-314.000.

Automotive Products Limited: *See—*
Young, Alastair J., 4,358,163, Cl. 303-22.00R.

Avco Corporation: *See—*
DeBolt, Harold E.; Morrissey, Joseph; and Suplinskas, Raymond J., 4,358,473, Cl. 427-10.000.
Kim, Chi S., 4,358,629, Cl. 585-538.000.

AVL AG: *See—*
Nedetzky, Walter, 4,358,423, Cl. 422-68.000.

Axford, Theodore G.: *See—*
Sheldon, William W.; and Axford, Theodore G., 4,357,902, Cl. 119-2.000.

Azuma, Makoto: *See—*
Takigami, Katsuhiko; and Azuma, Makoto, 4,358,785, Cl. 357-79.000.

Baba, Satoru: *See—*
Yoshida, Makoto; and Baba, Satoru, 4,358,319, Cl. 75-200.000.

Babcock-BSH Aktiengesellschaft: *See—*
Bahner, Friedrich; and Pleva, Harry, 4,358,208, Cl. 374-41.000.

Babcock & Wilcox Company, The: *See—*
Jabsen, Felix S., 4,358,421, Cl. 376-271.000.

Backx, Leo J. J.: *See—*
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,358,449, Cl. 424-248.580.

Bade, Heribert: *See—*
Brunn, Horst; Kiemle, Peter; Hund, Franz; and Bade, Heribert, 4,358,431, Cl. 423-632.000.

Badger, Everett H.; and Rogerson, Michael J., to Rogerson Aircraft Controls. Non recirculating method of disposing of waste products for aircrafts. 4,357,719, Cl. 4-316.000.

Badger, William A. Firearm and improvements therein. 4,357,774, Cl. 42-59.000.

Badolato, James A., to Bendix Corporation, The. Strain relief clamp and assembly. 4,358,177, Cl. 339-103.00M.

Bahner, Friedrich; and Pleva, Harry, to Babcock-BSH Aktiengesellschaft. Apparatus for determining enthalpy of a fluid medium. 4,358,208, Cl. 374-41.000.

Baichtal, James R.: *See—*
McDonald, John C.; and Baichtal, James R., 4,358,823, Cl. 364-200.000.

Bailey, Joseph; Clarke, David; and Johnston, Linda G., to Eastman Kodak Company. Photographic products employing nondiffusible metal-complexed azo dye-releasing compounds and precursors thereof. 4,358,527, Cl. 430-223.000.

Bailey, Robert F.: *See—*
Oeffinger, Thomas R.; Bailey, Robert F.; Kobayashi, Tsutomu; and Reekstin, John P., 4,358,339, Cl. 156-643.000.

Baker, Alfred L.: *See—*
Carroll, Charles B.; and Baker, Alfred L., 4,358,841, Cl. 369-77.000.

Baker, Juanita: *See—*
Winburn, Charles F.; Craft, William K.; Keferl, Gregory T.; Scheele, Wilfred; and Baker, Juanita, 4,357,741, Cl. 27-19.000.

Baldry, John F., to Dominion Chain Inc. Anti-skid chain. 4,357,975, Cl. 152-223.000.

Baldwin, John J.: *See—*
Atkinson, Joseph G.; Baldwin, John J.; and McClure, David E., 4,358,455, Cl. 424-263.000.

Ball, Harry J. Fibrous web for planting seeds, method of using same, apparatus for producing same. 4,357,780, Cl. 47-56.000.

Bally Manufacturing Corporation: *See—*
Burnside, Walter M., 4,358,114, Cl. 273-143.00R.

Ban, Keisuke; Daimaru, Akimasa; and Miyake, Noriaki, to Honda Giken Kogyo Kabushiki Kaisha. Method of producing a fiber-reinforced composite article. 4,357,986, Cl. 164-97.000.

Bangor Punta Corporation: *See—*
Blanchard, Gary N., 4,357,820, Cl. 72-389.000.

Bannon, Robert P., to Shell Oil Company. Adsorption process. 4,358,367, Cl. 208-310.00Z.

Banzola, Alberto: *See—*
Ciaccio, Lorenzo; and Banzola, Alberto, 4,357,921, Cl. 123-463.000.

Barrett, David M.: *See—*
Stivender, Paul M.; and Barrett, David M., 4,358,856, Cl. 378-167.000.

BASF Aktiengesellschaft: *See*—
Distler, Dieter; and Melan, Michael, 4,358,403, Cl. 524-745.000.
Janitschke, Lothar; and Hoffmann, Werner, 4,358,614, Cl. 564-248.000.
Schmid, Hans; Becker, Klaus; Leuchtmann, Guenter; and Schoettle, Klaus, 4,358,069, Cl. 242-192.000.

Bastian, Thomas W.; and Roberts, J. Sydney, to General Dynamics, Pomona Division. Multi-burn solid fuel restartable rocket and method of use. 4,357,795, Cl. 60-204.000.

Batesville Casket Company, Inc.: *See*—
Winburn, Charles F.; Craft, William K.; Keferl, Gregory T.; Scheele, Wilfred; and Baker, Juanita, 4,357,741, Cl. 27-19.000.

Batista, Armando: *See*—
Coburn, Robert A.; Evans, Richard T.; Genco, Robert J.; and Batista, Armando, 4,358,443, Cl. 424-230.000.

Battista, Orlando A. Stabilized hybrid fuel slurries. 4,358,292, Cl. 44-51.000.

Baumann, Doris, heir: *See*—
Buhrer, Erwin, deceased; Brandli, Grete, heir; Roth, Lotte, heir; and Baumann, Doris, heir, 4,357,984, Cl. 164-37.000.

Bausch, Joachim: *See*—
Federmann, Helmut; and Bausch, Joachim, 4,358,284, Cl. 464-181.000.

Bayer Aktiengesellschaft: *See*—
Brunn, Horst; Kiemle, Peter; Hund, Franz; and Bade, Heribert, 4,358,431, Cl. 423-632.000.
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,358,409, Cl. 260-465.00G.
Jautelat, Manfred; and Arlt, Dieter, 4,358,598, Cl. 548-216.000.
Stemmler, Ingo; Muller, Hanns P.; and Wagner, Kuno, 4,358,619, Cl. 568-388.000.
Wedemeyer, Karlfried; and Fiege, Helmut, 4,358,616, Cl. 568-45.000.

Bear Medical Systems, Inc.: *See*—
Ellestad, Raymond A.; and Sveen, Finn, 4,357,936, Cl. 128-204.230.

Beardmore, Geoffrey, to Smiths Industries Public Limited Company. Dynamically tuned gyroscopes. 4,357,837, Cl. 74-5.00F.

Beatty, William E., Jr.: *See*—
Wafer, John A.; Beatty, William E., Jr.; and Shimp, Alan B., 4,358,810, Cl. 361-93.000.

Becker, Klaus: *See*—
Schmid, Hans; Becker, Klaus; Leuchtmann, Guenter; and Schoettle, Klaus, 4,358,069, Cl. 242-192.000.

Beckman Instruments, Inc.: *See*—
Finney, Jack P.; and Ishimaru, Kenzo, 4,358,425, Cl. 422-102.000.
Nielsen, Steven T.; and Carey, Robert S., 4,358,420, Cl. 264-538.000.

Becton, Dickinson and Company: *See*—
Bittings, Gilbert S., 4,358,539, Cl. 435-301.000.
Citrin, Paul S., 4,358,203, Cl. 356-432.000.

Beecham Group Limited: *See*—
Duke, Susan A., 4,358,437, Cl. 424-52.000.

Behr, R. Douglas: *See*—
Sutrina, Thomas A.; and Behr, R. Douglas, 4,358,334, Cl. 156-497.000.

Beiersdorf Aktiengesellschaft: *See*—
Cohnen, Erich, 4,358,460, Cl. 424-321.000.

Beifus, Brian L., to Essex Group, Inc. AC Power control circuit. 4,358,730, Cl. 323-322.000.

Beinhauer, Ernest L., to AMP Incorporated. Method for repairing a pipe coupling. 4,358,417, Cl. 264-36.000.

Beitner, Shlomo, to Bipol Ltd. Thermoelectric device. 4,357,804, Cl. 62-3.000.

Belisle, Philip R.: *See*—
Pleickhardt, George C.; and Belisle, Philip R., 4,358,216, Cl. 403-387.000.

Bell & Howell Company: *See*—
Erikson, Rolf B., 4,358,017, Cl. 209-584.000.

Bell, James A.: *See*—
Blockley, Eugene T.; and Bell, James A., 4,357,910, Cl. 122-248.000.

Bell, Malcolm C. E.: *See*—
Victorovich, Grigori S.; Sridhar, Ramamritham; and Bell, Malcolm C. E., 4,358,430, Cl. 423-508.000.

Bell Telephone Laboratories, Incorporated: *See*—
Hebard, Arthur F.; and Vandenberg, Joanna M., 4,358,783, Cl. 357-5.000.

Beloit Corporation: *See*—
Alheid, Robert J., 4,358,484, Cl. 427-296.000.
Brendemuehl, Roger C., 4,358,725, Cl. 318-696.000.

Bendis Corporation, The: See—
Johannesen, Donald D.; and Williamson, Joseph R., 4,358,003, Cl. 188-73.430.

Bendix Corporation, The: *See*—
Badolato, James A., 4,358,177, Cl. 339-103.00M.
Bourdon, Normand C.; and Sanford, Richard, 4,358,179, Cl. 339-217.00S.
Fischer, Charles P.; Peterson, Andrew A.; Doi, Edward J.; Gosson, Rodney W.; and Mitrzyk, Jan C., Sr., 4,357,742, Cl. 29-33.00M.
Kytta, Oswald O., 4,357,746, Cl. 29-509.000.
Woodruff, Frank, 4,357,925, Cl. 123-506.000.

Benn, Raymond C.: *See*—
Merrick, Howard F.; Curwick, LeRoy R.; and Benn, Raymond C., 4,358,318, Cl. 420-449.000.

Bennett, Robert M., to Motorola, Inc. Digitally controlled bandwidth sampling filter-detector. 4,358,737, Cl. 328-138.000.

Berger, Richard M., to American Filtrona Corporation. Tobacco smoke filter having improved tar/carbon monoxide ratio. 4,357,950, Cl. 131-338.000.

Bergfelt, Nils H.: *See*—
Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., 4,358,472, Cl. 427-10.000.

Berglind, Eilert: *See*—
Henoch, Bengt; and Berglind, Eilert, 4,358,765, Cl. 343-6.5SS.

Bergquist, Dwight H., to Henningsen Foods, Inc. Spray dryer. 4,358,341, Cl. 159-4.00B.

Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., to MPD Technology Corporation. Particulate catalyst and preparation. 4,358,396, Cl. 252-430.000.

Berol Kemi AB: *See*—
Helisten, Karl M. E.; and Klingberg, Anders W., 4,358,368, Cl. 209-167.000.

Bertin & Cie: *See*—
Fage, Jean-Michel, 4,358,835, Cl. 367-87.000.

Bertoldo, Gene: *See*—
Intrater, Josef; and Bertoldo, Gene, 4,358,506, Cl. 428-408.000.

Besch, Creighton J. Conveyor. 4,358,010, Cl. 198-838.000.

Bessett, Richard A.: *See*—
Proud, Joseph M.; Auborn, James J.; and Bessett, Richard A., 4,358,641, Cl. 179-113.000.

Bevan, David: *See*—
Schoen, Allen H.; Schneider, John J.; Bevan, David; Rosenstein, Harold; and Woodley, David R., 4,358,074, Cl. 244-12.400.

Bex, Hans, to U.S. Philips Corporation. Circuit arrangement for starting and operating a gas- and/or vapor discharge lamp. 4,358,711, Cl. 315-208.000.

Beyl, Jean J. A., to Look S.A. Multidirectional release safety ski binding. 4,358,132, Cl. 280-628.600.

Bhise, Vijay S.: *See*—
Porcelli, Richard V.; and Bhise, Vijay S., 4,358,411, Cl. 260-546.000.

BICC Limited: *See*—
Lyon, Robert C.; Booton, Alan J.; and Kerfoot, Francis A., 4,357,818, Cl. 72-177.000.

Bielemeier, Hans, to Lohmann-Werke GmbH & Co. KG. Vertically adjustable device for suspending a frame provided with lighting, with radiators or the like. 4,358,817, Cl. 362-386.000.

Bierman, Scott A. Automatic fogging nozzle. 4,358,058, Cl. 239-447.000.

Biettron, Pierre, to Societe de Fabrication des Appareils Bourdon. Ambient temperature correction device for liquid expansion thermometers. 4,357,831, Cl. 374-197.000.

Bigall, Klaus-Dieter: *See*—
Rosler, Helmut; and Bigall, Klaus-Dieter, 4,357,853, Cl. 84-1.270.

Bijlenga, Gosse, to Gist-Brocades N.V. Novel polyvalent virus vaccine against rabies and canine distemper. 4,358,438, Cl. 424-89.000.

Bijma, Jan; and Linssen, Henricus W. M., to U.S. Philips Corporation. Cathode-ray tube. 4,358,703, Cl. 313-448.000.

Bille, Dag, to Svensk Ideutveckling AB Dag Bille. Device for recording and handling of information regarding time and activities. 4,358,777, Cl. 346-82.000.

Bipol Ltd.: *See*—
Beitner, Shlomo, 4,357,804, Cl. 62-3.000.

Bisonaya, Rudy Y.; and Farrell, Gerald J., to Elkay Manufacturing Company. Single lever faucet—sliding wedge operation mechanism. 4,357,957, Cl. 137-636.100.

Bissell, Inc.: *See*—
McDowell, David E., 4,357,727, Cl. 15-41.00R.

Bittinger, Arthur S.: *See*—
Han, Helen, 4,357,960, Cl. 138-97.000.

Bittings, Gilbert S., to Becton, Dickinson and Company. Throw-away subculturing device. 4,358,539, Cl. 435-301.000.

Blackburn, Bobby J.; and Csokmay, John M., to IRD Mechanalysis, Inc. Digital electronic balancing apparatus. 4,357,832, Cl. 73-462.000.

Blanchard, Gary N., to Bangor Punta Corporation. Safety control system for metal forming machine. 4,357,820, Cl. 72-389.000.

Blanpain, Guy; and Grandfils, Pierre, to Charbonnages de France. Continuous sliding support gantry for a large passage. 4,358,224, Cl. 405-298.000.

Blaurock, Gunther; Albert, Ernst; and Altrock, Horst, to Deutsche Star Kugelhalter GmbH. Ball screw and nut drive device. 4,357,838, Cl. 74-424.80R.

Bleckmann, Hans W.; and Loreck, Heinz, to ITT Industries, Inc. Method and circuit for the generation of a speed reference signal for an antiskid system. 4,358,164, Cl. 303-93.000.

Bliss & Laughlin Industries, Inc.: See—
Johnson, Eugene R.; and Haras, Jack P., 4,358,337, Cl. 156-526.000.

Blockley, Eugene T.; and Bell, James A. Multi-pass helical coil thermal fluid heater. 4,357,910, Cl. 122-248.000.

Bloch, Hulbert, to U.S. Philips Corporation. Personal protection circuit. 4,358,809, Cl. 361-46.000.

Bodine, Albert G. Sonic pump for pumping wells and the like employing dual transmission lines. 4,358,248, Cl. 417-53.000.

Bodner, Ronald E.; Crooks, Thomas L.; and Wottreng, Andrew H., to International Business Machines Corporation. Apparatus for enabling byte or word addressing of storage organized on a word basis. 4,358,826, Cl. 364-200.000.

Boeing Company, The: *See*—
Hayes, Robert B.; and Pompei, Arturo, 4,358,182, Cl. 350-287.000.

Schoen, Allen H.; Schneider, John J.; Bevan, David; Rosenstein, Harold; and Woodley, David R., 4,358,074, Cl. 244-12.400.

Boeing Vertol Company: *See—*
Campbell, Richard F., 4,358,154, Cl. 297-216.000.
Sechler, Clark W.; and Sherbert, Archie T., Jr., 4,358,714, Cl. 315-291.000.

Boggi, Brenda J., to Eastman Kodak Company. Four component hot-melt adhesives. 4,358,557, Cl. 524-272.000.

Boireau, Claude, to Neyrpic. Method of tracking for telecommunications antennae. 4,358,767, Cl. 343-117.00R.

Bolen, Charles E.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,358,320, Cl. 106-282.000.

Bolt Beranek and Newman Inc.: *See—*
Gray, Leslie M., 4,358,245, Cl. 416-189.000.

Bommaraju, Tilak V.; and Viswanathan, Krishnan, to Occidental Chemical Corporation. Method for extending cathode life. 4,358,353, Cl. 204-98.000.

Bonnet, Christian: *See—*
de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, 4,358,656, Cl. 219-121.0ED.

Booton, Alan J.: *See—*
Lyon, Robert C.; Booton, Alan J.; and Kerfoot, Francis A., 4,357,818, Cl. 72-177.000.

Bopp & Reuther GmbH: *See—*
Anselmann, Hans; and Mayer, Kurt, 4,357,956, Cl. 137-514.000.

Boucher, Frederic B.: *See—*
Wahl, Edward F., III; and Boucher, Frederic B., 4,357,802, Cl. 60-641.500.

Bourdon, Normand C.; and Sanford, Richard, to Bendix Corporation, The. Molded electrical connector insert. 4,358,179, Cl. 339-217.00S.

Bowman, Harold M. Sectional ingot mold. 4,358,084, Cl. 249-82.000.

Boyarsky, Alexandr A.: *See—*
Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N., 4,357,967, Cl. 140-92.100.

Boys, John T., to SPS Technologies, Inc. Bidirectional incremental encoding system for measuring maximum forward angular displacement of a bidirectionally rotatable rotating shaft. 4,358,735, Cl. 324-208.000.

Brackmann, Horst: *See—*
Kleefeldt, Frank; and Brackmann, Horst, 4,357,815, Cl. 70-337.000.

Braga, Albert T.; and Ohmann, William, to Whirlpool Corporation. Tub having a debris collector for an automatic washer. 4,357,812, Cl. 68-18.00D.

Brandli, Grete, heir: *See—*
Buhrer, Erwin, deceased; Brandli, Grete, heir; Roth, Lotte, heir; and Baumann, Doris, heir, 4,357,984, Cl. 164-37.000.

Brandt, Lothar; and Holst, Arno, to Hoechst Aktiengesellschaft. Water-soluble cellulose mixed ethers which contain a phosphonomethyl substituent and a process for preparing same. 4,358,587, Cl. 536-90.000.

Branigin, Michael H.; Knebel, Francis P.; and McClellan, Gerald V., to Sperry Corporation. Dynamic rank ordered scheduling mechanism. 4,358,829, Cl. 364-900.000.

Branson, Charles D.; and Demi, Roy C., to Robertshaw Controls Company. Fluid flow sensing switch device method of making the same. 4,357,748, Cl. 29-622.000.

Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, to Hoechst Aktiengesellschaft. Desulfurizing agent and process for its manufacture. 4,358,312, Cl. 75-58.000.

Brendemuehl, Roger C., to Beloit Corporation. Stepper motor control circuit. 4,358,725, Cl. 318-696.000.

Bretthauer, Hans-Jurgen: *See—*
Focke, Heinz H.; and Bretthauer, Hans-Jurgen, 4,358,336, Cl. 156-518.000.

Bridgestone Tire Company Limited: *See—*
Narumiya, Tsuneaki; Sato, Take; and Iwasawa, Shigeru, 4,358,505, Cl. 428-332.000.

Briefer, Dennis K.: *See—*
Lee, Shih-Ying; and Briefer, Dennis K., 4,358,814, Cl. 361-283.000.

Brima, Thomas S.: *See—*
Kwiatek, Jack; and Brima, Thomas S., 4,358,601, Cl. 549-295.000.

Brink, Heidi, deceased: *See—*
Sperner, Franz; and Brink, Heidi, deceased, 4,358,271, Cl. 433-201.000.

Brink, Rainer, heir: *See—*
Sperner, Franz; and Brink, Heidi, deceased, 4,358,271, Cl. 433-201.000.

Bristol Corporation: *See—*
Hostetler, Thomas E.; and Ellis, Ted J., Jr., 4,358,651, Cl. 200-334.000.

Bristol, James A.; and Lovey, Raymond G., to Schering Corporation. 1,2,4-Triazolo[4,3-a]pyridines. 4,358,453, Cl. 424-256.000.

Bristol, James A.; and Lovey, Raymond G., to Schering Corporation. 1,3,4-Triazolo[1,5-a]pyridines. 4,358,454, Cl. 424-256.000.

British Aerospace Public Limited Company: *See—*
Johnson, Colin C., 4,357,958, Cl. 137-846.000.

British Petroleum Company Limited, The: *See—*
Brown, David E.; and Mahmood, Mahmood N., 4,358,475, Cl. 427-34.000.
Richter, Ferdinand, 4,358,360, Cl. 208-33.000.

British Sidac Limited: *See—*
Jameson, Dennis E.; and Richards, David O., 4,358,370, Cl. 210-415.000.
Jameson, Dennis E.; and Richards, David O., 4,358,371, Cl. 210-415.000.

British Steel Corporation: *See—*
Normanton, Adrain S., 4,358,314, Cl. 75-60.000.

Broder, Daniel: *See—*
Held, Edward J.; and Broder, Daniel, 4,357,809, Cl. 62-457.000.

Brooks, Kevin E.: *See—*
Wovcha, Merle G.; and Brooks, Kevin E., 4,358,538, Cl. 435-253.000.

Brophy, Joseph L.: *See—*
Kuehnle, Manfred R.; Orme, Gordon; and Brophy, Joseph L., 4,358,195, Cl. 355-4.000.

Brotherston, Colin P., to Lucas Industries Limited. Liquid fuel injection pumping apparatus. 4,358,255, Cl. 417-462.000.

Brott, Donald J.: *See—*
Reid, David L.; Taylor, Dennis O.; and Brott, Donald J., 4,358,828, Cl. 364-565.000.

Brown, Byron L. Device and method for cementing a hip prosthesis in a femoral canal. 4,357,716, Cl. 3-1.913.

Brown, Dale G., to American Cyanamid Co. Chloro-substituted benzospiro cyclopropane carboxylic acid. 4,358,607, Cl. 562-405.000.

Brown, David E.; and Mahmood, Mahmood N., to British Petroleum Company Limited, The. Method of preparing active electrodes. 4,358,475, Cl. 427-34.000.

Brown, Leland T., to Motorola, Inc. Loop sensing circuit for use with a subscriber loop interface circuit. 4,358,645, Cl. 179-170.0NC.

Brown, Peter W., to Outboard Marine Corporation. Engine cooling system. 4,357,912, Cl. 123-41.080.

Brown, Theodore G. Bag closure device. 4,357,740, Cl. 24-30.50S.

Brownscombe, Thomas F., to Shell Oil Company. Process for reacting a phenol with an epoxy compound. 4,358,578, Cl. 528-91.000.

Brucker, Christian. Device for dispersing a liquid in a gas phase. 4,358,413, Cl. 261-36.00R.

Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, to Institut National de la Recherche Agronomioue. Phosphopeptides from casein-based material. 4,358,465, Cl. 426-42.000.

Brun, Charles, to Union Siderurgique du Nord et de l'Est de la France. Device for guiding band material and applications thereof. 4,358,267, Cl. 432-59.000.

Brunn, Horst; Kiemle, Peter; Hund, Franz; and Bade, Heribert, to Bayer Aktiengesellschaft. Production of magnetic iron oxides. 4,358,431, Cl. 423-632.000.

Brust, David P.: *See—*
Sutton, Richard C.; Brust, David P.; and Hamilton, Lewis R., 4,358,524, Cl. 430-213.000.

Bryant, James T.: *See—*
Wood, Stanley E.; and Bryant, James T., 4,357,856, Cl. 89-7.000.

Bryson, Charles E., Jr., to Emerson Electric Co. Electric heating elements. 4,358,669, Cl. 219-542.000.

Bubik, Leslie, to FMC Corporation. Bead breaking mechanism. 4,357,977, Cl. 157-1.280.

Buch, Jurgen. Apparatus for shielding high frequency electrical and electromagnetic waves for tight wall lead-ins for groups of lines. 4,358,632, Cl. 174-35.0MS.

Buck, Donald F.: *See—*
Young, Raymond R.; and Buck, Donald F., 4,358,754, Cl. 340-815.170.

Bucyrus-Erie Company: *See—*
Currier, Richard G.; and Mains, Donald M., 4,358,719, Cl. 318-161.000.

Budzich, Tadeusz. Inlet throttling valve of gas fuel compressor. 4,358,294, Cl. 48-191.000.

Buffalo Color Corporation: *See—*
Demler, Walter R.; and Todoroff, David M., 4,358,410, Cl. 260-507.00R.

Buhrer, Dora B., heir: *See—*
Buhrer, Erwin, deceased; Brandli, Grete, heir; Roth, Lotte, heir; and Baumann, Doris, heir, 4,357,984, Cl. 164-37.000.

Buhrer, Erwin, deceased (by Buhrer, Dora B., heir); by Brandli, Grete, heir; by Roth, Lotte, heir; and by Baumann, Doris, heir, to Georg Fischer Aktiengesellschaft. Method and apparatus for producing a foundry mold. 4,357,984, Cl. 164-37.000.

Builders Concrete, Inc.: *See—*
Sluys, Wesley W., 4,357,891, Cl. 114-230.000.

Bunnington Corporation: *See—*
Fagen, Ben W., Jr.; and Parks, Dale B., 4,357,901, Cl. 118-689.000.

Burger, Hartmut: *See—*
Mayer, Gustav; Hinz, Gerhard; Muhs, Herbert; Sturmfels, Georg; and Burger, Hartmut, 4,358,152, Cl. 296-188.000.

Burger, Rainer: *See—*
Kobler, Ingo; and Burger, Rainer, 4,357,871, Cl. 101-350.000.

Burke, James E., to Ethyl Products Company. Fluid dispenser method and apparatus. 4,358,057, Cl. 239-333.000.

Burnham, Robert D.: *See—*
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,358,851, Cl. 372-97.000.

Burns, Robert B., to Texaco Development Corporation. Method for confining an uncontrolled flow of hydrocarbon liquids. 4,358,219, Cl. 405-60.000.

Burnside, Walter M., to Bally Manufacturing Corporation. Reel spin mechanism. 4,358,114, Cl. 273-143.00R.

Burrell, Lawrence M., Jr.; and Cukier, Jean. Medical irrigation device. 4,357,937, Cl. 128-232.000.

Burroughs Corporation: *See—*
Reid, Gilbert R., 4,358,175, Cl. 339-75.00M.

Richardson, James M.; and Rubino, James, 4,358,016, Cl. 209-564.000.
Burrowes, Sherwin D., to RCA Corporation. Legibility for alpha-mosaic characters. 4,358,788, Cl. 358-22.000.
Buschbom, Floyd E.; and Hansen, Glen D., to Veda, Inc. Material conveying apparatus. 4,358,011, Cl. 198-861.000.
Buschor, Karl, to Gema AG Apparatebau. Apparatus for the automatic coating of articles. 4,357,900, Cl. 118-681.000.
Butler, L. Dennis; and Mankin, Leonid, to Sperry Corporation. Adjustable cross conveyor for bale handling apparatus. 4,358,235, Cl. 414-24.500.
Buzzell, James M., to Centronics Data Computer Corporation. Paper feed roller assembly. 4,358,039, Cl. 226-79.000.
Bynum, Frank O.: *See*—
Peck, Marvin H.; DeSmit, Larry M.; Conlon, John D.; and Bynum, Frank O., 4,357,843, Cl. 81-57.160.
Byrne, Martin A.; and Lupinski, John H., to United States of America, Energy. Method of making amorphous metal composites. 4,358,419, Cl. 264-111.000.
C-I-L Inc.: *See*—
Cameron, Gordon M., 4,357,991, Cl. 165-159.000.
C. R. Canfield & Company, Inc.: *See*—
Frantzich, William P.; and Persons, Garry R., 4,357,935, Cl. 128-156.000.
Cagnasso, Giovanni. Graphic scanning and printing device. 4,358,795, Cl. 358-295.000.
Cagnioncle, George, to Societe Chimique des Charbonnages SA. Device for preparing and injecting sealing charges of cement. 4,358,227, Cl. 406-96.000.
California Institute of Technology: *See*—
Johnston, Merrill F.; Shumka, Alex; Miller, Emmett; and Evans, Kenneth C., 4,358,732, Cl. 324-73.00R.
Cameron, Gordon M., to C-I-L Inc. Heat exchanger having improved tube layout. 4,357,991, Cl. 165-159.000.
Campbell, John, Jr.; Russell, Larry H.; and Robinson, Philip I., to Rockwell International Corporation. Fluidized bed combustor with improved indirect heat exchanger units. 4,357,907, Cl. 122-4.00D.
Campbell, Richard F., to Boeing Vertol Company. Vehicle crashworthy seat. 4,358,154, Cl. 297-216.000.
Campen, Kenneth W., to Tecumseh Products Company. Economical flywheel alternator for trickle charging a small lawnmower battery. 4,358,727, Cl. 322-90.000.
Canestaro, Michael J.; and Fey, Edmond O., to International Business Machines Corporation. Treatment of copper and use thereof. 4,358,479, Cl. 427-98.000.
Canon Kabushiki Kaisha: *See*—
Ando, Yujiro, 4,358,681, Cl. 250-324.000.
Fujino, Hitoshi, 4,358,285, Cl. 493-411.000.
Hirayama, Kazuhiro, 4,358,520, Cl. 430-54.000.
Koike, Hiroyuki; and Kato, Shigehiro, 4,358,103, Cl. 271-248.000.
Uchidoi, Masanori; and Ito, Tadashi, 4,358,188, Cl. 354-38.000.
Carey, Robert S.: *See*—
Nielsen, Steven T.; and Carey, Robert S., 4,358,420, Cl. 264-538.000.
Carl, William P.: *See*—
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,358,412, Cl. 260-968.000.
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,358,545, Cl. 521-27.000.
Carpenter, Robert W., to Hay, Louis E., a part interest. Moated pet feeder. 4,357,905, Cl. 119-61.000.
Carrico, Robert J.: *See*—
Albarella, James P.; Carrico, Robert J.; and Li, Thomas M., 4,358,604, Cl. 560-40.000.
Carrier Corporation: *See*—
Manning, John D., 4,357,805, Cl. 62-117.000.
Morris, Richard D.; and Lane, L. Thomas, 4,358,233, Cl. 410-127.000.
Carroll, Charles B.; and Baker, Alfred L., to RCA Corporation. Video disc player having stylus protecting apparatus. 4,358,841, Cl. 369-77.000.
Carsac, Claude R.: *See*—
de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, 4,358,656, Cl. 219-121.0ED.
Carstab Corporation: *See*—
Molt, Kenneth R., 4,358,555, Cl. 524-181.000.
Carton, Jean, to Alsthom-Altantique. Cooled film cassette for gamma radiography. 4,358,685, Cl. 250-475.200.
Cascini, Michael R., to Rockwell International Corporation. High resolution shaft position encoder. 4,358,753, Cl. 340-347.00P.
Case, John M. Check processing system. 4,358,671, Cl. 235-379.000.
Casio Computer Co., Ltd.: *See*—
Yamamoto, Haruo, 4,358,273, Cl. 434-201.000.
Castelli, Renato, to Samsonite Corporation. Rigid side arm device forming a guiding handle for suitcase. 4,358,006, Cl. 190-18.00A.
Caterpillar Tractor Co.: *See*—
Winzeler, James E., 4,357,840, Cl. 74-682.000.
Celanese Corporation: *See*—
Murphy, Carl D.; and McMillan, William P., 4,358,623, Cl. 568-473.000.
Shimp, David A., 4,358,551, Cl. 523-414.000.
Cella, James A.: *See*—
Lampe, Warren R.; Mitchell, Tyrone D.; and Cella, James A., 4,358,575, Cl. 528-17.000.
Central Machine Corporation: *See*—
Cullen, Ralph E., 4,358,143, Cl. 294-64.00R.
Centronics Data Computer Corporation: *See*—
Buzzell, James M., 4,358,039, Cl. 226-79.000.
Ceseri, Anthony, to National Union Electric Corporation. Mounting nut. 4,358,098, Cl. 267-141.500.
Ceshkovsky, Ludwig; and Dakin, Wayne R., to Discovision Associates. Spindle servo system for videodisc player. 4,358,796, Cl. 358-322.000.
Chaix, Jean E.; Fajeau, Maurice; and Ouzeau, Jean F., to Commissariat a l'Energie Atomique. Apparatus for separating the liquid and vapor phases of a fluid. 4,358,301, Cl. 55-318.000.
Chambers, Arthur D. Self aligning truck trailer. 4,358,128, Cl. 280-404.000.
Chang, Kuo H.; Lee, Tzuo-Chang; and Lin, Jacob W., to Honeywell Inc. Technique of introducing an inertace layer in a thermoplastic photoconductor medium. 4,358,519, Cl. 430-2.000.
Channing, Harry M.: *See*—
Eberle, William J.; and Channing, Harry M., 4,358,170, Cl. 312-268.000.
Chapman, Derek D.; and Reczek, James A., to Eastman Kodak Company. Nondiffusible 6-arylazo-3-pyridinol. 4,358,404, Cl. 260-156.000.
Charbonnages de France: *See*—
Blanpain, Guy; and Grandfils, Pierre, 4,358,224, Cl. 405-298.000.
Charles, Derek A., to Vessa Limited. Wheelchair frame construction. 4,358,125, Cl. 280-242.0WC.
Chase, Herbert S. Game and teaching device construction. 4,358,274, Cl. 434-205.000.
Chastain, David L., Jr.: *See*—
Crews, Harold R.; Chastain, David L., Jr.; and Ledis, Stephen L., 4,358,394, Cl. 252-408.000.
Chavannes, Marc A. Reinforced laminated and corrugated board-like structures and method for the manufacturing thereof. 4,358,498, Cl. 428-108.000.
Cheal, James; and McHenry, Vincent J., to Southwest Microwave, Inc. Coupling unit for coaxial cable including means for radiating wave energy. 4,358,764, Cl. 343-5.0PD.
Chen, Nai Y.; and Walsh, Dennis E., to Mobil Oil Corporation. Burning properties of fluid coke. 4,358,290, Cl. 44-1.00F.
Chen, Sow-Mei L.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,358,605, Cl. 560-121.000.
Chevron Research Company: *See*—
Rosenthal, Joel W.; Dahlberg, Arthur J.; and Kuehler, Christopher W., 4,358,359, Cl. 208-8.0LE.
Santilli, Donald S., 4,358,400, Cl. 252-455.00R.
Chick, Douglas K. Pipeline repair kit. 4,357,961, Cl. 138-97.000.
Chihara, Yasuaki: *See*—
Yokobe, Tetsuo; Masugo, Mitsuru; Chihara, Yasuaki; and Maruyama, Yutaka, 4,358,407, Cl. 260-243.300.
Childress, David L.: *See*—
Hayes, William V.; and Childress, David L., 4,358,405, Cl. 260-239.00E.
Childs, Richard B.; and Zory, Peter S., Jr., to Optical Information Systems, Inc. High speed edge illumination photodetector. 4,358,676, Cl. 250-211.00J.
Chimura, Ippei: *See*—
Akimoto, Saburo; Maruchi, Sachio; Fukaya, Masahiro; Shibano, Tomishi; Chimura, Ippei; Asakura, Hiroshi; Kitazume, Keisuke; and Fuse, Shiro, 4,358,494, Cl. 428-40.000.
Chiquiar-Arias, Marcelo, to Mercantile & Technical Promotions Inc. Single dose disposable container. 4,358,028, Cl. 222-107.000.
Chivas Products, Limited: *See*—
Moore, Ronald D., 4,357,734, Cl. 16-125.000.
Chlebowski, Edmund M., to Uniroyal, Inc. Method of welding lined pipe. 4,357,745, Cl. 29-460.000.
Chmiel, Horst: *See*—
Mauser, Rudolf; and Chmiel, Horst, 4,357,944, Cl. 128-663.000.
Cholod, Michael S.: *See*—
Nemec, Joseph W.; and Cholod, Michael S., 4,358,622, Cl. 568-470.000.
Chore-Time Equipment, Inc.: *See*—
Kallin, Ingmar N., 4,358,168, Cl. 308-135.000.
Christen, Jean-Louis, to Societe pour l'Exploitation de l'Hotel du Rhone. Installation comprising an ice-box for a hotel room. 4,358,171, Cl. 312-286.000.
Christiansen, Hans-Martin: *See*—
Pfleiderer, Hans-Joerg; Stein, Karl-Ulrich; Koubek, Michael; and Christiansen, Hans-Martin, 4,358,786, Cl. 358-310.000.
Chrysler Corporation: *See*—
Nash, Culver R., 4,358,150, Cl. 296-50.000.
Chu, Chin C., to Mobil Oil Corporation. Zeolite catalysts modified with group IV A metals. 4,358,397, Cl. 252-437.000.
Chugai Seiyaku Kabushiki Kaisha: *See*—
Takematsu, Tetsuo; Takeuchi, Masaki; Okada, Masanori; Sugiyama, Hiroshi; and Murakami, Yasushi, 4,358,309, Cl. 71-120.000.
Chy, Hui-Neng. Spring-energized stapling machine. 4,358,043, Cl. 227-155.000.
Chynoweth, David P., to Institute of Gas Technology. In situ biological beneficiation of peat in the production of hydrocarbon fuels. 4,358,537, Cl. 435-162.000.
Chyung, Kenneth: *See*—
Andrus, Ronald L.; Chyung, Kenneth; Reade, Richard F., deceased; and Reade, Clara M., administratrix, 4,358,541, Cl. 501-5.000.
Ciaccio, Lorenzo; and Banzola, Alberto, to Weber Carburatori Azienda Della Weber S.p.A. Pressure regulator for injection systems for spark ignition internal combustion engines. 4,357,921, Cl. 123-463.000.

Ciba-Geigy Corporation: *See*—
Sieber, Peter; Kamber, Bruno; and Rink, Hans, 4,358,439, Cl. 424-177.000.
Citizen Watch Company Limited: *See*—
Hashimoto, Yukio, 4,358,728, Cl. 323-275.000.
Citrin, Paul S., to Becton Dickinson and Company. Apparatus for analyzing and evaluating tests in a plurality of wells. 4,358,203, Cl. 356-432.000.
Claassen, Josef: *See*—
Kremer, Hubert; and Claassen, Josef, 4,358,038, Cl. 226-53.000.
Clark, George B., to Dow Chemical Company, The. Shear-vectoring design for composite casing end and removable, pressure-locking closure therefor. 4,358,377, Cl. 210-323.200.
Clark, Mark L.: *See*—
Moss, Owen R.; Clark, Mark L.; and Rossignol, E. John, 4,357,903, Cl. 119-15.000.
Clark, Michael A. G., to Redland Automation Limited. Object detection. 4,358,749, Cl. 340-38.00L.
Clark, Richard J.: *See*—
Hawkins, Harold R.; Gardner, Clive A.; Roke, Lindsey J.; Clark, Richard J.; and Rumble, Warwick F., 4,358,213, Cl. 403-231.000.
Clark, William D. K.: *See*—
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,358,396, Cl. 252-430.000.
Clarke, David: *See*—
Bailey, Joseph; Clarke, David; and Johnston, Linda G., 4,358,527, Cl. 430-223.000.
Clary, Robert M.: *See*—
Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., 4,358,472, Cl. 427-10.000.
Clatworthy, Edward F.: *See*—
Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,358,511, Cl. 428-595.000.
Click, Loring H. Fish bait positioner. 4,357,775, Cl. 43-43.100.
Cline, Keith W.: *See*—
Palmer, Denis L.; Palmer, Robert A., Jr.; and Palmer, Robert A., Sr., 4,358,693, Cl. 310-46.000.
Coal Industry (Patents) Limited: *See*—
Abbott, John, 4,358,827, Cl. 364-500.000.
Coburn, Robert A.; Evans, Richard T.; Genco, Robert J.; and Batista, Armando, to Research Foundation of State University of New York, The. Method and composition for controlling the growth of microorganisms. 4,358,443, Cl. 424-230.000.
Codex Corporation: *See*—
Qureshi, Shahid U. H., 4,358,853, Cl. 375-60.000.
Coffee, Ronald A., to Imperial Chemical Industries Limited. Electrostatic spraying. 4,358,059, Cl. 239-691.000.
Coffey, James P.: *See*—
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,358,396, Cl. 252-430.000.
Cognard, Jacques; and Phan, Trung H., to Asulab S.A. Liquid crystal-base composition for an electro-optical device. 4,358,392, Cl. 252-299.100.
Cohnen, Erich, to Beiersdorf Aktiengesellschaft. Substituted 3-aryl-2-cycloalken-1-one and method of preparation thereof. 4,358,460, Cl. 424-321.000.
Colli, Luigi: *See*—
D'Agnolo, Armando; Colli, Luigi; and Gaiotti, Ugo, 4,357,792, Cl. 57-279.000.
Combustion Engineering, Inc.: *See*—
Comparato, Joseph R.; and Jacobs, Martin, 4,357,883, Cl. 110-245.000.
Commercial Shearing, Inc.: *See*—
Haner, Lambert, 4,358,724, Cl. 318-681.000.
Commissariat a l'Energie Atomique: *See*—
Chaix, Jean E.; Fajeau, Maurice; and Ouzeau, Jean F., 4,358,301, Cl. 55-318.000.
Lemercier, Pierre; Marchal, Paul; Moreau, Jean-Pierre; Vertut, Jean; and Ligozat, Henri, 4,357,764, Cl. 37-54.000.
Compagnie Francaise des Petroles: *See*—
de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, 4,358,656, Cl. 219-121.0ED.
Compagnie Generale des Etablissements Michelin: *See*—
Coulombeau, Alain; and Peyron, Georges, 4,358,390, Cl. 252-182.100.
Compagnie Industrielle de Mecanismes en abrege C.I.M.: *See*—
Delomez, Gerard, 4,358,718, Cl. 318-54.000.
Compagnie Internationale Pour l'Informatique Cii Honeywell Bull: *See*—
Sery, Jacques, 4,358,849, Cl. 371-53.000.
Comparato, Joseph R.; and Jacobs, Martin, to Combustion Engineering, Inc. Bed drain cover assembly for a fluidized bed. 4,357,883, Cl. 110-245.000.
Compton, William E. High compression thimble. 4,358,212, Cl. 403-210.000.
Comstedt, Anders P. P.: *See*—
Elfner, Bo A.; and Comstedt, Anders P. P., 4,358,734, Cl. 324-161.000.
Concept Engineering, Inc.: *See*—
Geschwender, Robert C., 4,358,124, Cl. 280-47.180.
Confer, Charles L., to Inframetrics, Inc. Digital scan converter for image scanning and display system. 4,358,789, Cl. 358-140.000.
Conlon, John D.: *See*—
Peck, Marvin H.; DeSmit, Larry M.; Conlon, John D.; and Bynum, Frank O., 4,357,843, Cl. 81-57.160.
Conn, James K.: *See*—
Miller, Coleman J.; and Conn, James K., 4,358,746, Cl. 333-261.000.
Conner, Algie J.: *See*—
Hutchings, LeRoi E.; and Conner, Algie J., 4,358,365, Cl. 208-96.000.
Conner, Michael S.: *See*—
Dolan, Francis H.; and Conner, Michael S., 4,358,468, Cl. 426-250.000.
Conoco Inc.: *See*—
Mack, Mark P.; Decker, Lewis B., Jr.; and Wallace, Adrian L., 4,358,572, Cl. 526-142.000.
Conquest, Ernest A., to Varian Associates, Inc. Helix traveling wave tubes with reduced gain variation. 4,358,704, Cl. 315-3.500.
Conrad, Richard A., to Teledyne Industries, Inc. Electrical connector for leadless integrated circuit packages. 4,358,173, Cl. 339-17.0CF.
Cope, Geoffrey W., to Dresser Industries, Inc. Radial truck centering brake assembly. 4,357,999, Cl. 188-52.000.
Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Compositions of nitrile rubber and cellulose ester. 4,358,553, Cl. 524-37.000.
Cordes, Jack C.; and Denen, Dennis J., to White Castle System, Inc. Adjustable electrical power control for gas discharge lamps and the like. 4,358,716, Cl. 315-306.000.
Cordewener, Heinz: *See*—
Megerle, Friedrich; and Cordewener, Heinz, 4,358,094, Cl. 266-190.000.
Cornell, Robert W.: *See*—
Filipowicz, Edwin A.; and Cornell, Robert W., 4,358,169, Cl. 312-39.000.
Cornia, Jared B. Apparatus for manipulating wingnuts. 4,357,845, Cl. 81-125.000.
Corning Glass Works: *See*—
Andrus, Ronald L.; Chyung, Kenneth; Reade, Richard F., deceased; and Reade, Clara M., administratrix, 4,358,541, Cl. 501-5.000.
Gulati, Suresh T.; and Scherer, George W., 4,358,181, Cl. 350-96.310.
Hares, George B.; Kerko, David J.; and Morse, David L., 4,358,542, Cl. 501-13.000.
Cornish, Elbert J.: *See*—
Mitchell, Arthur W.; and Cornish, Elbert J., 4,358,126, Cl. 280-242.0WC.
Coronel, Paul K. Transverse wing actuation system. 4,358,077, Cl. 244-218.000.
Corsette, Douglas F. Liquid dispenser. 4,357,718, Cl. 4-228.000.
Coules, Ronald A.: *See*—
Schneider, Jerry M.; and Coules, Ronald A., 4,358,162, Cl. 301-63.00R.
Coulombeau, Alain; and Peyron, Georges, to Compagnie Generale des Etablissements Michelin. Zinc electrode. 4,358,390, Cl. 252-182.100.
Coulter Electronics, Inc.: *See*—
Crews, Harold R.; Chastain, David L., Jr.; and Ledis, Stephen L., 4,358,394, Cl. 252-408.000.
Coulter Systems Corporation: *See*—
Kuehnle, Manfred R.; Orme, Gordon; and Brophy, Joseph L., 4,358,195, Cl. 355-4.000.
Cowles, John H.: *See*—
Magazian, Harry; Gabrielson, Alan L.; and Cowles, John H., 4,358,167, Cl. 308-78.000.
Craft, William K.: *See*—
Winburn, Charles F.; Craft, William K.; Keferl, Gregory T.; Scheele, Wilfred; and Baker, Juanita, 4,357,741, Cl. 27-19.000.
Cranor, Benny D.; and Runyon, Robert C., to Western Electric Company, Inc. Thermally isolated fume exhausting attachment for soldering irons. 4,358,662, Cl. 219-230.000.
Creare Incorporated: *See*—
Stacy, W. Dodd, 4,357,932, Cl. 126-433.000.
Creusot-Loire: *See*—
Pere, Gerard, 4,358,357, Cl. 204-256.000.
Crews, Harold R.; Chastain, David L., Jr.; and Ledis, Stephen L., to Coulter Electronics, Inc. Process for preparing whole blood reference controls having long term stability. 4,358,394, Cl. 252-408.000.
Crooks, Thomas L.: *See*—
Bodner, Ronald E.; Crooks, Thomas L.; and Wottreng, Andrew H., 4,358,826, Cl. 364-200.000.
Crookston, Ronald W.; and Dakin, Hayes O., Jr., to Westinghouse Electric Corp. Power circuit breaker with opening and closing mechanisms. 4,358,648, Cl. 200-150.00R.
Croteau, Lucien; Marchand, Alain; and Houle, Bertrand, to Tenco Machinery Ltd. Snow plow side wing assembly. 4,357,766, Cl. 37-281.000.
Crouse, David J.: *See*—
Tallent, Othar K.; Crouse, David J.; and Mailen, James C., 4,358,426, Cl. 423-10.000.
Cselt, Centro Studi E Laboratori Telecomunicazioni S.p.A.: *See*—
Pirani, Giancarlo, 4,358,844, Cl. 370-18.000.
Csokmay, John M.: *See*—
Blackburn, Bobby J.; and Csokmay, John M., 4,357,832, Cl. 73-462.000.
CTS Corporation: *See*—
Naylor, Robert W., 4,358,691, Cl. 310-12.000.
Cukier, Jean: *See*—
Burrell, Lawrence M., Jr.; and Cukier, Jean, 4,357,937, Cl. 128-232.000.

Cullen, Ralph E., to Central Machine Corporation. Roll lift and transfer apparatus. 4,358,143, Cl. 294-64.00R.

Cullen, William P.: *See—*
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,385, Cl. 252-32.70E.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,386, Cl. 252-32.70E.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,387, Cl. 252-33.400.

Cumming, James C., to Rockwell International Corporation. Multiple piston friction brake. 4,358,000, Cl. 188-71.500.

Cummins Engine Company, Inc.: *See—*
Reid, David L.; Taylor, Dennis O.; and Brott, Donald J., 4,358,828, Cl. 364-565.000.

Cuomo, Jerome J.; and Woodall, Jerry M., to International Business Machines Corporation. Solid state renewable energy supply. 4,358,291, Cl. 44-3.00B.

Curiger, Karl: *See—*
Gasser, Hermann; Curiger, Karl; and Novak, Peter, 4,357,793, Cl. 57-304.000.

Currier, Richard G.; and Mains, Donald M., to Bucyrus-Erie Company. Peak power limiter system for excavator. 4,358,719, Cl. 318-161.000.

Curwick, LeRoy R.: *See—*
Merrick, Howard F.; Curwick, LeRoy R.; and Benn, Raymond C., 4,358,318, Cl. 420-449.000.

Cuscurida, Michael; and Dominquez, Richard J. G., to Texaco Inc. Novel catalyst system for rim elastomers. 4,358,547, Cl. 521-126.000.

Cyberon Corporation: *See—*
Friedman, Eliot I., 4,357,971, Cl. 141-27.000.

D. L. Auld Company, The: *See—*
Waugh, Robert E., 4,358,483, Cl. 427-287.000.

D'Agnolo, Armando; Colli, Luigi; and Gaiotti, Ugo, to Officine Savio S.p.A. Deflector for spindles in double twisting machines. 4,357,792, Cl. 57-279.000.

Dahlberg, Arthur J.: *See—*
Rosenthal, Joel W.; Dahlberg, Arthur J.; and Kuehler, Christopher W., 4,358,359, Cl. 208-8.0LE.

Dahneke, Barton E., to University of Rochester, The. Apparatus for separation of gas borne particles. 4,358,302, Cl. 55-392.000.

Daimaru, Akimasa: *See—*
Ban, Keisuke; Daimaru, Akimasa; and Miyake, Noriaki, 4,357,986, Cl. 164-97.000.

Daiwa Can Company, Ltd.: *See—*
Nagata, Seigo; and Saito, Iwao, 4,358,226, Cl. 406-82.000.

Dakin, Hayes O., Jr.: *See—*
Crookston, Ronald W.; and Dakin, Hayes O., Jr., 4,358,648, Cl. 200-150.00R.

Dakin, Wayne R.: *See—*
Ceshkovsky, Ludwig; and Dakin, Wayne R., 4,358,796, Cl. 358-322.000.

Damsky, Ben L.: *See—*
Zlupko, John E.; and Damsky, Ben L., 4,358,747, Cl. 337-273.000.

Dana Corporation: *See—*
Harris, Charles G.; Mora, Erwin P.; Singh, Mahendra P.; and Solberg, David P., 4,357,806, Cl. 62-186.000.
Patel, Hiralal V., 4,357,822, Cl. 72-402.000.

Daniel Doncaster & Sons Limited: *See—*
Skedgell, Anthony N., 4,358,544, Cl. 501-77.000.

Daniel, Jean-Claude; Schuppiser, Jean-Luc; and Tricot, Marc, deceased (by Tricot, Nicole, heir), to Rhone Poulenc Industries. Magnetic polymer latex and preparation process. 4,358,388, Cl. 252-62.540.

Darmenton, Patrick: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,358,286, Cl. 8-405.000.

Davies, John B. C., to Industrial and Overseas Securities Limited. Core extraction and insertion apparatus. 4,358,242, Cl. 414-746.000.

DeAhna, Heinz-Dieter: *See—*
Fischer, Robert; and DeAhna, Heinz-Dieter, 4,358,321, Cl. 106-302.000.

De Boer, Jacob, to U.S. Philips Corporation. Phase comparison circuit. 4,358,736, Cl. 328-133.000.

DeBolt, Harold E.; Morrissey, Joseph; and Suplinskas, Raymond J., to Avco Corporation. Process control system. 4,358,473, Cl. 427-10.000.

Debrey, Andrew D. Furnace. 4,358,095, Cl. 266-242.000.

Dechantsreiter, Max J., to Harnischfeger Corporation. Warehouse crane including inclinable tote pan puller. 4,358,239, Cl. 414-661.000.

Decker, Lewis B., Jr.: *See—*
Mack, Mark P.; Decker, Lewis B., Jr.; and Wallace, Adrian L., 4,358,572, Cl. 526-142.000.

De Dube, Brett. Display card holder. 4,357,768, Cl. 40-17.000.

DeGaeta, Albert M.; and DeGaeta, Edythe C. Magnetic compass. 4,357,756, Cl. 33-355.00R.

DeGaeta, Edythe C.: *See—*
DeGaeta, Albert M.; and DeGaeta, Edythe C., 4,357,756, Cl. 33-355.00R.

Degussa AG: *See—*
Kunz, Peter, 4,358,350, Cl. 204-43.00G.

Degussa Aktiengesellschaft: *See—*
Fischer, Robert; and DeAhna, Heinz-Dieter, 4,358,321, Cl. 106-302.000.
Kleemann, Axel; Nygren, Robert; and Wagner, Rudolf, 4,358,615, Cl. 564-475.000.
Schwarze, Werner; and Kleemann, Axel, 4,358,459, Cl. 424-283.000.
Simon, Franz; Huth, Werner; Dorbath, Bernd; and Zilske, Wolfgang, 4,358,351, Cl. 204-44.000.

Delhey, Hans-Martin: *See—*
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,358,312, Cl. 75-58.000.

Delomez, Gerard, to Compagnie Industrielle de Mecanismes en abrege C.I.M. Centralized electric control device in particular for automobile vehicle latches. 4,358,718, Cl. 318-54.000.

De Long, Harold D. Hospital bed tray. 4,357,881, Cl. 108-49.000.

Delory, Bernard; Ξuloge, Gerard; and Fleury, Georges, to Thomson-CSF. Insulated collector assembly for power electronic tubes and a tube comprising such a collector. 4,358,707, Cl. 315-5.380.

DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, to Wisconsin Alumni Research Foundation. 26,26,26,27,27,27-Hexafluoro-1α,25-dihydroxycholecalciferol and process for preparing same. 4,358,406, Cl. 260-239.55R.

Demi, Roy C., to Robertshaw Controls Company. Burner valve control device, an electrical switch unit therefor and methods of making the same. 4,358,647, Cl. 200-61.860.

Demi, Roy C.: *See—*
Branson, Charles D.; and Demi, Roy C., 4,357,748, Cl. 29-622.000.

Demler, Walter R.; and Todoroff, David M., to Buffalo Color Corporation. Process for the preparation of meta sulfobenzoic acid and meta hydroxybenzoic acid therefrom. 4,358,410, Cl. 260-507.00R.

Demus, Dietrich: *See—*
Schubert, Herrmann; Demus, Dietrich; Zaschke, Horst; Kuschel, Frank; Pelzl, Gerhard; Nothnikz, Hans-Ulrich; and Schliemann, Willibald, 4,358,589, Cl. 544-179.000.
Zaschke, Horst; Demus, Dietrich; and Deresch, Sylvia, 4,358,393, Cl. 252-299.610.

Denen, Dennis J.: *See—*
Cordes, Jack C.; and Denen, Dennis J., 4,358,716, Cl. 315-306.000.

deNiet, Edmond, to U.S. Philips Corporation. Apparatus for recording and/or reproducing signals. 4,358,799, Cl. 360-84.000.

Dennis, Ashley A., to RLD Industries Ltd. Display sign. 4,357,773, Cl. 40-618.000.

Dennison Manufacturing Company: *See—*
Leahy, David J., 4,357,769, Cl. 40-152.100.

de Passoz, Guy A. M., to Societe Anonyme de Telecommunications Company. Process for the compression of signalling data or the like transmitted in a train of multiplexed PCM information. 4,358,845, Cl. 370-44.000.

Deresch, Sylvia: *See—*
Zaschke, Horst; Demus, Dietrich; and Deresch, Sylvia, 4,358,393, Cl. 252-299.610.

Derkacs, Thomas; Fetheroff, Charles W.; Matay, Istvan M.; and Toth, Istvan J., to TRW Inc. Control apparatus. 4,358,471, Cl. 427-9.000.

de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, to Compagnie Francaise des Petroles. Electron beam welding. 4,358,656, Cl. 219-121.0ED.

DeSmit, Larry M.: *See—*
Peck, Marvin H.; DeSmit, Larry M.; Conlon, John D.; and Bynum, Frank O., 4,357,843, Cl. 81-57.160.

Detroit Neurosurgical Foundation: *See—*
Muller, George H., 4,357,940, Cl. 128-303.00R.

Detz, Clifford M.; and Lightstone, John B., to Union Carbide Corporation. Oriented graphite layer and formation. 4,358,046, Cl. 228-176.000.

Deutsch, Warren D. Lacrosse stick. 4,358,117, Cl. 273-326.000.

Deutsche Star Kugelhalter GmbH: *See—*
Blaurock, Gunther; Albert, Ernst; and Altrock, Horst, 4,357,838, Cl. 74-424.80R.

Deutschle, Robert; and Wolf, Wolfram, to E. C. H. Will (GmbH & Co.). Apparatus for supporting paper reels in winding machines. 4,358,066, Cl. 242-68.400.

Dexter Corporation, The: *See—*
Gadbois, Gerald W.; and Sutherland, Peter D., 4,358,504, Cl. 428-288.000.

Dickenson, Royston J., to General Electric Company. Control system for bypass steam turbines. 4,357,803, Cl. 60-662.000.

Dienes, Zoltan B., to Thomas & Betts Corporation. Protective cover for use in sealed cable splices. 4,358,634, Cl. 174-88.00R.

Di Girolamo, Silvestro. Apparatus for brewing a hot beverage made up of a solution of a powdered substance in a liquid. 4,357,861, Cl. 99-323.300.

Dinges, Frank; and Tartaglio, Robert L. Keyboard operated controller. 4,358,715, Cl. 315-292.000.

Dinter, Konrad M., to RCA Corporation. Voltage control oscillator having frequency control circuit with improved memory. 4,358,740, Cl. 331-1.00A.

Discovision Associates: *See—*
Ceshkovsky, Ludwig; and Dakin, Wayne R., 4,358,796, Cl. 358-322.000.
Wilkinson, Richard L., 4,358,774, Cl. 346-1.100.

Disko, Harry: *See—*
Rivette, Denni F.; and Disko, Harry, 4,358,104, Cl. 272-31.00R.

Distler, Dieter; and Melan, Michael, to BASF Aktiengesellschaft. Aqueous low-emulsifier dispersions of butadiene-styrene emulsion copolymers containing carboxyl groups. 4,358,403, Cl. 524-745.000.

Dittmar, Wilfried: *See—*
Franz, Reinhard; and Dittmar, Wilfried, 4,357,850, Cl. 84-1.010.

Dittrich, Ferdinand J.: *See—*
Ingham, Herbert S.; and Dittrich, Ferdinand J., 4,358,053, Cl. 239-79.000.

Dr. L. Zambeletti S.p.A.: *See—*
Quadro, Giuseppe, 4,358,444, Cl. 424-230.000.

Doi, Edward J.: *See*—
Fischer, Charles P.; Peterson, Andrew A.; Doi, Edward J.; Gossoo, Rodney W.; and Mitrzyk, Jan C., Sr., 4,357,742, Cl. 29-33.00M.

Dolan, Francis H.; and Conner, Michael S., to General Foods Inc. Process for preparing a marbled meat pet food. 4,358,468, Cl. 426-250.000.

Dominion Chain Inc.: *See*—
Baldry, John F., 4,357,975, Cl. 152-223.000.

Dominquez, Richard J. G.: *See*—
Cuscurida, Michael; and Dominquez, Richard J. G., 4,358,547, Cl. 521-126.000.

Domoleczny, James D.; Loh, Raymond D. Y.; Manske, Hans E.; Marchese, Joseph N.; and Michelotti, Carl A., to Zenith Radio Corporation. Precision screen elevating and control means for a projection television receiver. 4,358,792, Cl. 358-254.000.

Doo, Ven Y., to International Business Machines Corporation. Epitaxially extended polycrystalline structures utilizing a predeposit of amorphous silicon with subsequent annealing. 4,358,326, Cl. 148-174.000.

Dorbath, Bernd: *See*—
Simon, Franz; Huth, Werner; Dorbath, Bernd; and Zilske, Wolfgang, 4,358,351, Cl. 204-44.000.

Dow Chemical Company, The: *See*—
Clark, George B., 4,358,377, Cl. 210-323.200.
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,358,412, Cl. 260-968.000.
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,358,545, Cl. 521-27.000.
Hayes, William V.; and Childress, David L., 4,358,405, Cl. 260-239.00E.
Malhotra, Sudarshan K., 4,358,594, Cl. 546-298.000.
McCrary, Avis L.; and Stevens, Michael G., 4,358,577, Cl. 528-89.000.
Mettetal, Bonnie K.; and Kolonko, Richard P., Jr., 4,358,347, Cl. 203-38.000.
Stevenson, Fred, 4,358,466, Cl. 426-106.000.
Sutrina, Thomas A.; and Behr, R. Douglas, 4,358,334, Cl. 156-497.000.

Dow Chemical Company & Merrell Dow Pharmaceuticals Incorporated, The: *See*—
Goralski, Christian T., 4,358,592, Cl. 546-075.000.

Doward, Colin J.: *See*—
Goldberg, Paul R.; and Doward, Colin J., 4,358,192, Cl. 354-299.000.

Dowell, Frederick S.; and Healy, Benedict P., to Dunlop Limited. Load-taking apparatus for a disc pack. 4,358,004, Cl. 188-217.000.

Downey, Daniel F.; and Lecouras, George T., to Varian Associates, Inc. End point detection method for physical etching process. 4,358,338, Cl. 156-627.000.

Dowty Hydraulic Units Limited: *See*—
Joyner, Philip G., 4,358,260, Cl. 418-132.000.

Dresser Industries, Inc.: *See*—
Cope, Geoffrey W., 4,357,999, Cl. 188-52.000.

Drews, Ulrich: *See*—
Rosenzopf, Gunter; Schnurle, Hans; Rebmann, Wolfgang; and Drews, Ulrich, 4,357,922, Cl. 123-489.000.

Dreyer, Charles W., to Sealectro Corporation. Interconnected assembly of an array of high frequency coaxial connectors. 4,358,174, Cl. 339-64.00M.

Druffel, James B., to Prescolite. Wireway. 4,358,635, Cl. 174-101.000.

Dudley, Robert G. De-palletizing/palletizing apparatus for cans and can-type containerizations. 4,358,236, Cl. 414-96.000.

Duke, Susan A., to Beecham Group Limited. Compositions. 4,358,437, Cl. 424-52.000.

Dunbar, Sidney G., to Owens-Corning Fiberglas Corporation. Glass fiber mat for reinforcing polyamides. 4,358,502, Cl. 428-283.000.

Dunklin, Hubbard L.; and Reeves, Larry E., to Reeves, Larry Eugene. Simulated vehicle louvre applique. 4,358,488, Cl. 428-31.000.

Dunlop Limited: *See*—
Dowell, Frederick S.; and Healy, Benedict P., 4,358,004, Cl. 188-217.000.

Duo-Fast Corporation: *See*—
Potucek, Frank R., 4,358,014, Cl. 206-347.000.

Du Pont de Nemours, E. I., and Company: *See*—
Abele, Werner, 4,358,529, Cl. 430-270.000.
Sutton, Richard F., Jr., 4,358,581, Cl. 528-353.000.

DuPont, Regis: *See*—
Koletar, Gabor I.; Frost, Jonathan R.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,358,451, Cl. 424-251.000.

Durnev, Valery V., deceased: *See*—
Golubkov, Boris P.; Fedorov, Svyatoslav N.; Durnev, Valery V., deceased; and Durneva, Tamara S., administratrix, 4,357,941, Cl. 128-316.000.

Durneva, Tamara S., administratrix: *See*—
Golubkov, Boris P.; Fedorov, Svyatoslav N.; Durnev, Valery V., deceased; and Durneva, Tamara S., administratrix, 4,357,941, Cl. 128-316.000.

Dutcher, Robert G.; and O'Neill, Edward G., to Medtronic, Inc. Epicardial pacing lead with stylet controlled helical fixation screw. 4,357,946, Cl. 128-785.000.

Dykehouse, Robert H., to Export Tool Company. Injection molding assembly. 4,358,033, Cl. 222-509.000.

Dynak, Michael J.: *See*—
Husson, Alan L.; and Dynak, Michael J., 4,357,997, Cl. 187-29.00R.

Dyno Industrier A/S: *See*—
Hiorth, Hans, 4,357,882, Cl. 109-1.00S.

E. C. H. Will (GmbH & Co.): *See*—
Deutschle, Robert; and Wolf, Wolfram, 4,358,066, Cl. 242-68.400.

Eakins, Raymond L. Blending system. 4,358,205, Cl. 366-141.000.

Eastman Kodak Company: *See*—
Ames, William A., 4,358,564, Cl. 525-261.000.
Bailey, Joseph; Clarke, David; and Johnston, Linda G., 4,358,527, Cl. 430-223.000.
Boggs, Brenda J., 4,358,557, Cl. 524-272.000.
Chapman, Derek D.; and Reczek, James A., 4,358,404, Cl. 260-156.000.
Mooberry, Jared B.; and Archie, William C., Jr., 4,358,525, Cl. 430-217.000.
Sutton, Richard C.; Brust, David P.; and Hamilton, Lewis R., 4,358,524, Cl. 430-213.000.

Eaton Corporation: *See*—
Koslosky, Howard E.; and Reetz, Tustin C., 4,358,815, Cl. 361-355.000.

Ebara Corporation: *See*—
Itoh, Kanichi; Hirayama, Yoshio; and Kodaira, Masanori, 4,358,540, Cl. 435-316.000.

Eberhardt, H. Alfred. Heating system for fireplaces. 4,357,930, Cl. 126-121.000.

Eberle, William J.; and Channing, Harry M., to General Battery Corporation. Group storage tower for storing stacks, groups of elements or pasted battery plates in a dust-free manner. 4,358,170, Cl. 312-268.000.

Eberly, Paul E., Jr., to Exxon Research and Engineering Company. Removal of sulfur from process streams. 4,358,297, Cl. 55-62.000.

Ebisu, Tomio: *See*—
Yamamoto, Masahiko; Nishino, Yoshinori; Wada, Masao; and Ebisu, Tomio, 4,358,264, Cl. 425-425.000.

Eckert, Rudolf J. A., to Shell Oil Company. Lube oil additive. 4,358,565, Cl. 525-280.000.

Ecord, Glenn M.; and Schomburg, Calvin, to United States of America, National Aeronautics and Space Administration. Method of repairing surface damage to porous refractory substrates. 4,358,480, Cl. 427-140.000.

Ecord, Glenn M.; and Schomburg, Calvin, to United States of America, National Aeronautics and Space Administration. Densification of porous refractory substrates. 4,358,486, Cl. 427-379.000.

Edwards, Richard H.: *See*—
Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., 4,358,472, Cl. 427-10.000.

Egami, Tsuneyuki: *See*—
Kohama, Tokio; Kawai, Hisasi; Obayashi, Hideki; and Egami, Tsuneyuki, 4,357,830, Cl. 73-204.000.

Egerton Hospital Equipment Limited: *See*—
Thompson, Martin S., 4,357,722, Cl. 5-62.000.

Ehrat, Arthur H. Field-sprayer tank-vehicle having means for on-site metering and mixing of soil-treating chemicals. 4,358,054, Cl. 239-155.000.

Ehrbar, Richard: *See*—
Moyes, William C.; Gerber, Russell W.; and Ehrbar, Richard, 4,358,277, Cl. 434-322.000.

Ehrlich, Robert. Educational devices. 4,358,276, Cl. 434-302.000.

Eickmann, Karl. Fluid motor with moveable members workable independently of its drive means. 4,358,073, Cl. 244-12.100.

Eisenwerke Fried. Wilh. Duker GmbH & Co.: *See*—
Richter, Karl, 4,358,061, Cl. 241-82.400.

Eklund, Erik. Telescopic mast. 4,357,785, Cl. 52-632.000.

EL-FI Innovationer AB: *See*—
Elfner, Bo A.; and Comstedt, Anders P. P., 4,358,734, Cl. 324-161.000.

Eldon, James, III: *See*—
Saint, David; Eldon, James, III; and Latone, Thomas L., 4,357,735, Cl. 16-224.000.

Elfner, Bo A.; and Comstedt, Anders P. P., to EL-FI Innovationer AB. Methods and apparatuses for detecting the speed of an asynchronous motor. 4,358,734, Cl. 324-161.000.

Eli Lilly and Company: *See*—
Jones, Charles D.; and Goettel, Mary E., 4,358,593, Cl. 546-202.000.
Nash, Stephen M.; Koch, Kay F.; and Hoehn, Marvin M., 4,358,584, Cl. 536-7.100.

Elkay Manufacturing Company: *See*—
Bisonaya, Rudy Y.; and Farrell, Gerald J., 4,357,957, Cl. 137-636.100.

Ellestad, Raymond A.; and Sveen, Finn, to Bear Medical Systems, Inc. Directional thermistor assist sensing. 4,357,936, Cl. 128-204.230.

Elley, Dayton W., to Structural Metals, Inc. Method and apparatus for simultaneously forming three uniform metal rounds. 4,357,819, Cl. 72-204.000.

Elliott, William J., to Quietlite International, Ltd. Direct current power source for an electric discharge lamp. 4,358,717, Cl. 315-308.000.

Ellis, Stanley H., to United States of America, Air Force. Small gas turbofan engine with regenerating diffuser. 4,357,796, Cl. 60-262.000.

Ellis, Ted J., Jr.: *See*—
Hostetler, Thomas E.; and Ellis, Ted J., Jr., 4,358,651, Cl. 200-334.000.

Ellner, Sidney. Ultrasonic cleaning apparatus. 4,358,204, Cl. 366-118.000.

Ely, Lewis C., to Freeman, Ron, a part interest. Collection, storage and disposal system for refuse, trash or any other applicable materials. 4,358,238, Cl. 414-387.000.

Emerson Electric Co.: *See—*
Bryson, Charles E., Jr., 4,358,669, Cl. 219-542.000.
Kieffer, Vernon E., 4,357,968, Cl. 140-92.100.

Emmett Laboratories, Inc.: *See—*
Greenhut, Bart E.; and Saphir, Oded, 4,358,056, Cl. 239-305.000.

Enso-Gutzeit Osakeyhtio : *See—*
Matula, Jouni; and Vikio, Pentti, 4,358,369, Cl. 209-211.000.

Epifanov, Valery S.: *See—*
Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N., 4,357,967, Cl. 140-92.100.

Epple, Franz: *See—*
Fleischmann, Josef; and Epple, Franz, 4,357,763, Cl. 36-67.00D.

Ericsson, Lars: *See—*
Wiklund, Klas R.; and Ericsson, Lars, 4,357,833, Cl. 73-490.000.

Erikson, Rolf B., to Bell & Howell Company. Mail direction system. 4,358,017, Cl. 209-584.000.

Ernst, Bernhard; Schmengler, Eckhard; and Pichl, Hans, to Rohde & Schwarz GmbH & Co. KG. Radio direction finder. 4,358,768, Cl. 343-118.000.

Erwin Hengstler Hydraulik GmbH: *See—*
Sauer, Ivan, 4,357,955, Cl. 137-270.000.

Escher Wyss Limited: *See—*
Hefter, Josef; Heitmann, Peter; Link, Christoph; Schultz, Hans-Joachim; Stotz, Wolf-Gunter; and Volz, Karl, 4,357,743, Cl. 29-116.0AD.

ESCO Corporation: *See—*
Hungerford, Emory D., 4,358,147, Cl. 294-88.000.

Esselte Pendaflex Corporation: *See—*
Holland-Letz, Gunter, 4,358,333, Cl. 156-384.000.

Essex Group, Inc.: *See—*
Beifus, Brian L., 4,358,730, Cl. 323-322.000.
Puffer, Leroy G.; and Waters, James P., 4,358,202, Cl. 356-430.000.

Estes, Nelson N. Static power switching system for induction heating. 4,358,654, Cl. 219-10.770.

Ethyl Products Company: *See—*
Burke, James E., 4,358,057, Cl. 239-333.000.

Eufusia, Eugene A.: *See—*
Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., 4,358,472, Cl. 427-10.000.

Euloge, Gerard: *See—*
Delory, Bernard; Euloge, Gerard; and Fleury, Georges, 4,358,707, Cl. 315-5.380.

Eustacchio, Claudio, to Fuchs & Co. Aktiengesellschaft fur Elektrodraht-Erzeugung und Maschinenbau. Apparatus for controlling the ventilation effect on material dried in a tunnel drying plant. 4,357,762, Cl. 34-229.000.

Evans, Kenneth C.: *See—*
Johnston, Merrill F.; Shumka, Alex; Miller, Emmett; and Evans, Kenneth C., 4,358,732, Cl. 324-73.00R.

Evans, Richard T.: *See—*
Coburn, Robert A.; Evans, Richard T.; Genco, Robert J.; and Batista, Armando, 4,358,443, Cl. 424-230.000.

Ex-Cell-O Corporation: *See—*
Melnyk, William, 4,357,990, Cl. 165-76.000.

Export Tool Company: *See—*
Dykehouse, Robert H., 4,358,033, Cl. 222-509.000.

Exxon Production Research Co.: *See—*
Jahns, Hans O.; Heuer, Christopher E.; and Hsu, Hsiu-Hsyong, 4,358,223, Cl. 405-157.000.

Exxon Research and Engineering Company: *See—*
Eberly, Paul E., Jr., 4,358,297, Cl. 55-62.000.
Hughes, Vincent L., 4,358,574, Cl. 526-339.000.
Powers, Kenneth W.; and Schatz, Ralph H., 4,358,560, Cl. 524-468.000.
Ver Strate, Gary, 4,358,566, Cl. 525-339.000.

Ezawa, Sadaaki; and Saito, Tsutomu, to Kabushiki Kaisha Kawai Gakki Seisakusho. Key switch information assignor. 4,357,849, Cl. 84-1.010.

Ezzell, Bobby R.; Carl, William P.; and Mod, William A., to Dow Chemical Company, The. Preparation of vinyl ethers. 4,358,412, Cl. 260-968.000.

Ezzell, Bobby R.; Carl, William P.; and Mod, William A., to Dow Chemical Company, The. Sulfonic acid electrolytic cell having flourinated polymer membrane with hydration product less than 22,000. 4,358,545, Cl. 521-27.000.

Faber, Johannes W.; and van der Giessen, Pieter, to U.S. Philips Corporation. Disk unit with rotatable circular information disk. 4,358,801, Cl. 360-97.000.

Fage, Jean-Michel, to Bertin & Cie. Method and device for matching the reflector of an acoustic echo ranging system. 4,358,835, Cl. 367-87.000.

Fagen, Ben W., Jr.; and Parks, Dale B., to Bunnington Corporation. Method and system for magnetically sensing and controlling toner concentration and optical density of copies in electrostatic reproduction. 4,357,901, Cl. 118-689.000.

Fahim, Mostafa S., to University of Missouri, The Curators of the. Method of treating male infertility. 4,357,934, Cl. 128-1.00R.

Fajeau, Maurice: *See—*
Chaix, Jean E.; Fajeau, Maurice; and Ouzeau, Jean F., 4,358,301, Cl. 55-318.000.

Falk, Richard A. Replacement cap for repeating use thermocouple. 4,358,630, Cl. 136-234.000.

Falkow, Stanley; and Moseley, Stephen L., to University of Washington, Board of Regents of the. Specific DNA probes in diagnostic microbiology. 4,358,535, Cl. 435-5.000.

Farmitalia Carlo Erba S.p.A.: *See—*
Perrone, Ettore; Nannini, Giuliano; Alpegiani, Marco; Giudici, Franco; and Meinardi, Giuseppe, 4,358,448, Cl. 424-246.000.

Farquharson, Graeme J.: *See—*
Serban, Alexander; Watson, Keith G.; and Farquharson, Graeme J., 4,358,307, Cl. 71-92.000.

Farr, Aaron V., to Abex Corporation. Bridge positioning device. 4,358,721, Cl. 318-604.000.

Farrell, Gerald J.: *See—*
Bisonaya, Rudy Y.; and Farrell, Gerald J., 4,357,957, Cl. 137-636.100.

Fauquant, Jacques: *See—*
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,358,465, Cl. 426-42.000.

Fedele, Franco, to Norca Corporation. Fluid load distribution system. 4,357,878, Cl. 105-159.000.

Federmann, Helmut; and Bausch, Joachim, to Felten & Guilleaume Carlswerk AG. Fiber-reinforced driveshaft. 4,358,284, Cl. 464-181.000.

Fedorov, Svyatoslav N.: *See—*
Golubkov, Boris P.; Fedorov, Svyatoslav N.; Durnev, Valery V., deceased; and Durneva, Tamara S., administratrix, 4,357,941, Cl. 128-316.000.

Fehrenbacher, Daniel R. Carpet shield. 4,357,898, Cl. 118-504.000.

Feix, Wolfgang: *See—*
Ruell, Hartwig; and Feix, Wolfgang, 4,358,677, Cl. 250-216.000.

Feldkamper, Richard, to Windmoller & Holscher. Adhesive applicator. 4,357,896, Cl. 118-262.000.

Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N. Method for making coil groups of electric machines. 4,357,967, Cl. 140-92.100.

Felten & Guilleaume Carlswerk AG: *See—*
Federmann, Helmut; and Bausch, Joachim, 4,358,284, Cl. 464-181.000.

Ferriss, Lincoln S., to Singer Company, The. Transimpedance oscillator having high gain amplifier. 4,358,742, Cl. 331-158.000.

Fetheroff, Charles W.: *See—*
Derkacs, Thomas; Fetheroff, Charles W.; Matay, Istvan M.; and Toth, Istvan J., 4,358,471, Cl. 427-9.000.

Fey, Edmond O.: *See—*
Canestaro, Michael J.; and Fey, Edmond O., 4,358,479, Cl. 427-98.000.

Fiege, Helmut: *See—*
Wedemeyer, Karlfried; and Fiege, Helmut, 4,358,616, Cl. 568-45.000.

Fields, Ellis K., to Standard Oil Company (Indiana). Thiocarbamates of 1,3,4-thiadiazole-2,5-dithiol. 4,358,597, Cl. 548-142.000.

Fields, Ellis K.: *See—*
Nimry, Tayseer S.; and Fields, Ellis K., 4,358,579, Cl. 528-188.000.
Nimry, Tayseer S.; and Fields, Ellis K., 4,358,580, Cl. 528-188.000.
Nimry, Tayseer S.; and Fields, Ellis K., 4,358,582, Cl. 528-353.000.
Paschke, Edward E.; Nimry, Tayseer S.; and Fields, Ellis K., 4,358,562, Cl. 524-600.000.

Filgas, Ludovic S., Jr.; and Magnussen, Haakon T., Jr., to Altex Scientific, Inc. Discharge lamp ballast. 4,358,712, Cl. 315-243.000.

Filipowicz, Edwin A.; and Cornell, Robert W., to Griffith-Hope Company. Dispenser for coiled sheet material. 4,358,169, Cl. 312-39.000.

Finkelmann, Heino; Rehage, Gunther; and Kollmann, Georg, to Wacker-Chemie GmbH. Compositions containing liquid crystal phases. 4,358,391, Cl. 252-299.010.

Finney, Clement S.: *See—*
Sass, Allan; McCarthy, Harry E.; Kaufman, Paul R.; and Finney, Clement S., 4,358,344, Cl. 201-4.000.

Finney, Jack P.; and Ishimaru, Kenzo, to Beckman Instruments, Inc. Penetrable centrifuge tube. 4,358,425, Cl. 422-102.000.

Finzi, Massimo, to S.A.E. Societa Anonima Elettrificazione S.p.A. Steel tower for supporting high- and very high-tension lines in electric networks. 4,357,786, Cl. 52-649.000.

First National Bank of Cobb County, executor: *See—*
Shaw, William D., deceased; First National Bank of Cobb County, executor; and Shaw, Sharon G., executrix, 4,357,962, Cl. 138-125.000.

Fischer, Charles P.; Peterson, Andrew A.; Doi, Edward J.; Gossoo, Rodney W.; and Mitrzyk, Jan C., Sr., to Bendix Corporation, The. Electric brush contact forming apparatus. 4,357,742, Cl. 29-33.00M.

Fischer, Karlheinz: *See—*
Rudolph, Otfried; Peter, Gunter; and Fischer, Karlheinz, 4,357,870, Cl. 101-246.000.

Fischer, Robert; and DeAhna, Heinz-Dieter, to Degussa Aktiengesellschaft. Lead-free ceramic pink-coloring material consisting of chromium-tin-calcium-silicon-alkali metal oxide plus bismuth and/or phosphorus oxide and process. 4,358,321, Cl. 106-302.000.

Fishel & Paykel Limited: *See—*
Hawkins, Harold R.; Gardner, Clive A.; Roke, Lindsey J.; Clark, Richard J.; and Rumble, Warwick F., 4,358,213, Cl. 403-231.000.

Fitts, Paul F.: *See—*
Scholl, Jule A.; and Fitts, Paul F., 4,358,723, Cl. 318-661.000.

Flaig, Ulrich: *See—*
Stumpp, Gerhard; Wessel, Wolf; Flaig, Ulrich; Piwonka, Fridolin; and Walz, Ludwig, 4,357,920, Cl. 123-446.000.

Fleischmann, Josef; and Epple, Franz, to Sportartikelfabrik Karl Uhl GmbH. Sole assembly for a sports shoe. 4,357,763, Cl. 36-67.00D.

Fleury, Georges: *See—*
Delory, Bernard; Euloge, Gerard; and Fleury, Georges, 4,358,707, Cl. 315-5.380.

Florida, John W. Golf practice target for chipping and putting. 4,358,116, Cl. 273-177.00R.

Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-vinyl and cyclopropyl substituted prostanoic acids and congeners. 4,358,605, Cl. 560-121.000.

Fluid Energy Systems Corporation: *See*—
Nagely, John L., 4,358,258, Cl. 418-71.000.

FMC Corporation: *See*—
Bubik, Leslie, 4,357,977, Cl. 157-1.280.
Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., Jr., 4,358,296, Cl. 55-38.000.

Focke & Co.: *See*—
Focke, Heinz H.; and Bretthauer, Hans-Jurgen, 4,358,336, Cl. 156-518.000.

Focke, Heinz H.; and Bretthauer, Hans-Jurgen, to Focke & Co. Device for applying tapes (tear-tapes) or the like to a web of material. 4,358,336, Cl. 156-518.000.

Folmsbee, Alan C.; Kokkonen, Kim; and Spaw, William J., to Intel Corporation. Memory redundancy apparatus for single chip memories. 4,358,833, Cl. 365-200.000.

Fontana, Giampiero, to Valextra S.p.A. Suit-case on wheels with an incorporated dragging device. 4,358,005, Cl. 190-18.00A.

Ford Motor Company: *See*—
Hideg, Laszlo, 4,357,923, Cl. 123-492.000.
Hunt, Albert A., 4,358,051, Cl. 236-34.500.
Lambe, John J.; McCarthy, Shaun L.; and Stadler, Henry L., 4,358,743, Cl. 332-7.510.

Foss, Stephen D.; and Lin, Sheng H., to General Electric Company. Method for determining volatilization rates of dissolved volatiles from solid waste materials. 4,357,824, Cl. 73-19.000.

Fourcadier, Chantal: *See*—
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,358,286, Cl. 8-405.000.

Fowler, Joseph M. Gauge and workpiece holder for a forming machine. 4,357,821, Cl. 72-389.000.

Fox, Daniel W.; Kaduk, Bruce A.; and Starr, John B., Jr., to General Electric Company. Copolymers of polyarylates with polyethylene arylates and process for their preparation. 4,358,568, Cl. 525-439.000.

Foxboro Company, The: *See*—
Shinskey, Francis G., 4,358,346, Cl. 203-1.000.

Framatome: *See*—
Yazidjian, Jean-Claude, 4,357,908, Cl. 122-32.000.

Francis, Willard P.: *See*—
Hudson, David J.; and Francis, Willard P., 4,357,988, Cl. 165-26.000.

Franklin, Cecil, to Simmonds Precision Products, Inc. Signal selection circuit. 4,358,755, Cl. 340-518.000.

Frantzich, William P.; and Persons, Garry R., to C. R. Canfield & Company, Inc. Dry method of making a dry socket dressing. 4,357,935, Cl. 128-156.000.

Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H.: *See*—
Theurer, Josef, 4,357,874, Cl. 104-2.000.

Franz, Reinhard; and Dittmar, Wilfried. Tone generator system for electronic musical instruments. 4,357,850, Cl. 84-1.010.

Frazier, James H., to Honeywell, Inc. Steered low cost auto focus system. 4,358,674, Cl. 250-204.000.

Frazier, James H.; and Wittenberger, John C., to Honeywell Inc. Low contrast default for auto focus system. 4,358,675, Cl. 250-204.000.

Frederick, David C.: *See*—
Hope, William K., Sr.; and Frederick, David C., 4,357,791, Cl. 57-122.000.

Freeman, Ron: *See*—
Ely, Lewis C., 4,358,238, Cl. 414-387.000.

French, Michael P., to RCA Corporation. Phase locked loop tuning control system including a sync activated AFT signal seeking arrangement. 4,358,791, Cl. 358-193.100.

Fried. Krupp Gesellschaft mit Beschrankter Haftung: *See*—
Knuth, Manfred; and Homann, Thorsten, 4,357,865, Cl. 100-117.000.

Friedman, Eliot I., to Cyberon Corporation. Syringe gauging, loading and injection apparatus. 4,357,971, Cl. 141-27.000.

Froberg, Magnus L., to Owens-Corning Fiberglas Corporation. Method for preparing molten glass. 4,358,304, Cl. 65-27.000.

Frost, Jonathan R.: *See*—
Koletar, Gabor I.; Frost, Jonathan R.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,358,451, Cl. 424-251.000.

Frye, Norman V. All-terrain vehicle of the motorcycle type. 4,357,893, Cl. 114-288.000.

Fu, Horng-Sen, to Texas Instruments Incorporated. Submicron patterning without using submicron lithographic technique. 4,358,340, Cl. 156-643.000.

Fuchs & Co. Aktiengesellschaft fur Elektrodraht-Erzeugung und Maschinenbau: *See*—
Eustacchio, Claudio, 4,357,762, Cl. 34-229.000.

Fuji Electric Co., Ltd.: *See*—
Akimoto, Mamoru; Konno, Kazushi; and Hagyu, Toshimasa, 4,357,751, Cl. 29-879.000.

Fuji Photo Film Co., Ltd.: *See*—
Arai, Yoshihiro, 4,358,806, Cl. 360-119.000.
Fujita, Shinsaku; Itoh, Isamu; Ono, Shigetoshi; Harada, Tooru; and Yoshida, Yoshinobu, 4,358,526, Cl. 430-223.000.
Ishiwata, Mamoru; and Minoda, Minoru, 4,358,523, Cl. 430-207.000.
Kanda, Masao; and Yoshida, Makoto, 4,358,067, Cl. 242-75.510.
Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, 4,358,521, Cl. 430-83.000.
Koyama, Koichi; and Fujita, Shinsaku, 4,358,532, Cl. 430-505.000.
Sasaki, Noboru; Sera, Hidefumi; Ohki, Nobutaka; and Yamaguchi, Jun, 4,358,534, Cl. 430-537.000.
Shiba, Keisuke, 4,358,530, Cl. 430-273.000.
Takagi, Yoshihiro; and Hayashi, Katsumi, 4,358,528, Cl. 430-251.000.

Fuji Photo Optical Co., Ltd.: *See*—
Sakai, Yutaka, 4,358,190, Cl. 354-198.000.

Fuji Xerox Co., Ltd.: *See*—
Fuse, Mario; and Takenouchi, Mutsuo, 4,358,478, Cl. 427-76.000.

Fujino, Hitoshi, to Canon Kabushiki Kaisha. Paper folding apparatus. 4,358,285, Cl. 493-411.000.

Fujino, Masahiko; Wakimasu, Mitsuhiro; and Kitada, Chieko, to Takeda Chemical Industries, Ltd. Polypeptide and its production and use. 4,358,440, Cl. 424-177.000.

Fujita, Shinsaku; Itoh, Isamu; Ono, Shigetoshi; Harada, Tooru; and Yoshida, Yoshinobu, to Fuji Photo Film Co., Ltd. Photographic light-sensitive sheet for the color diffusion transfer process. 4,358,526, Cl. 430-223.000.

Fujita, Shinsaku: *See*—
Koyama, Koichi; and Fujita, Shinsaku, 4,358,532, Cl. 430-505.000.

Fujita, Susumu: *See*—
Horikoshi, Ichiro; Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; and Fujita, Susumu, 4,358,642, Cl. 179-115.50R.

Fujita, Tadashi; and Soejima, Shigeo, to NGK Insulators, Ltd. Method of removing nitrogen oxides from waste gas by selective contact reduction. 4,358,428, Cl. 423-239.000.

Fujita, Takashi; and Iwamoto, Masao, to Toray Industries Incorporated. Dry planographic printing plate. 4,358,522, Cl. 430-166.000.

Fujitsu Limited: *See*—
Hanahara, Keishi, 4,358,733, Cl. 324-77.00E.
Tamada, Haruo; and Kudo, Osamu, 4,358,752, Cl. 340-347.0AD.

Fukaya, Masahiro: *See*—
Akimoto, Saburo; Maruchi, Sachio; Fukaya, Masahiro; Shibano, Tomishi; Chimura, Ippei; Asakura, Hiroshi; Kitazume, Keisuke; and Fuse, Shiro, 4,358,494, Cl. 428-40.000.

Fukuda, Kazushige: *See*—
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Fukuda, Kazushige, 4,358,576, Cl. 528-30.000.

Fukushima, Isao: *See*—
Nishijima, Hideo; Fukushima, Isao; and Yokota, Hajime, 4,358,797, Cl. 360-14.200.

Fukushima, Mitsuo: *See*—
Tada, Masahiro; Ichikawa, Hirokazu; Fukushima, Mitsuo; Nakamichi, Koya; Ouchi, Koji; and Ishigaki, Yoshio, 4,358,769, Cl. 343-742.000.

Fukuta, Masakazu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Capping assembly for use in fuel storage tank for vehicles. 4,358,023, Cl. 220-209.000.

Furlone, Donato: *See*—
Paggini, Alberto; Romano, Ugo; Furlone, Donato; and Sanfilippo, Domenico, 4,358,625, Cl. 568-867.000.

Furumai, Koro: *See*—
Tanaka, Eiichi; Furumai, Koro; Indo, Masahiro; and Kawabata, Norio, 4,358,265, Cl. 431-76.000.

Fuse, Mario; and Takenouchi, Mutsuo, to Fuji Xerox Co., Ltd. Sputtering method of manufacturing film type light receiving element under controlled oxygen atmosphere. 4,358,478, Cl. 427-76.000.

Fuse, Shiro: *See*—
Akimoto, Saburo; Maruchi, Sachio; Fukaya, Masahiro; Shibano, Tomishi; Chimura, Ippei; Asakura, Hiroshi; Kitazume, Keisuke; and Fuse, Shiro, 4,358,494, Cl. 428-40.000.

Gabrielson, Alan L.: *See*—
Magazian, Harry; Gabrielson, Alan L.; and Cowles, John H., 4,358,167, Cl. 308-78.000.

Gadbois, Gerald W.; and Sutherland, Peter D., to Dexter Corporation, The. Flame retardant activated carbon web. 4,358,504, Cl. 428-288.000.

GAF Corporation: *See*—
Hale, Joseph F., 4,358,193, Cl. 354-299.000.

Gaiotti, Ugo: *See*—
D'Agnolo, Armando; Colli, Luigi; and Gaiotti, Ugo, 4,357,792, Cl. 57-279.000.

Gamble, Harold S.: *See*—
Stewart, James A. C.; Armstrong, Brian M.; Gamble, Harold S.; Mallon, John; Monds, Fabian C.; Ryan, William D.; and Wakefield, James, 4,358,759, Cl. 340-554.000.

Gamo, Takaharu; Moriwaki, Yoshio; and Yamashita, Toshio, to Matsushita Electric Industrial Co., Ltd. Material for hydrogen absorption and desorption. 4,358,432, Cl. 423-644.000.

Gannaway, Edwin L., to Tecumseh Products Company. Split crankcase radial automotive compressor. 4,358,251, Cl. 417-319.000.

Gardner, Clive A.: *See*—
Hawkins, Harold R.; Gardner, Clive A.; Roke, Lindsey J.; Clark, Richard J.; and Rumble, Warwick F., 4,358,213, Cl. 403-231.000.

Garneau, Maurice N. Pipe wrapping machine. 4,358,064, Cl. 242-7.230.

Garner, Linton S. Book end. 4,358,019, Cl. 211-42.000.

Garoutte, Kurt F.; and Michener, Curtis J., to Honeywell Inc. Header device for electrochemical cells. 4,358,514, Cl. 429-181.000.

Gasser, Hermann; Curiger, Karl; and Novak, Peter, to Luwa AG. Sliver-processing frame having drawing rollers. 4,357,793, Cl. 57-304.000.

Geberit AG: *See—*
Stahli, Paul, 4,357,720, Cl. 4-378.000.
Gebert, Ulrich; Granzer, Ernold; Greve, Heinz-Gunter; and Thorwart, Werner, to Hoechst Aktiengesellschaft. O-Alkylated oximes and pharmaceutical composition thereof. 4,358,450, Cl. 424-250.000.
Geiger, Albert. Packaging unit. 4,358,022, Cl. 215-224.000.
Gema AG Apparatebau: *See—*
Buschor, Karl, 4,357,900, Cl. 118-681.000.
Genco, Robert J.: *See—*
Coburn, Robert A.; Evans, Richard T.; Genco, Robert J.; and Batista, Armando, 4,358,443, Cl. 424-230.000.
General Battery Corporation: *See—*
Eberle, William J.; and Channing, Harry M., 4,358,170, Cl. 312-268.000.
General Dynamics, Pomona Division: *See—*
Bastian, Thomas W.; and Roberts, J. Sydney, 4,357,795, Cl. 60-204.000.
General Electric Company: *See—*
Dickenson, Royston J., 4,357,803, Cl. 60-662.000.
Foss, Stephen D.; and Lin, Sheng H., 4,357,824, Cl. 73-19.000.
Fox, Daniel W.; Kaduk, Bruce A.; and Starr, John B., Jr., 4,358,568, Cl. 525-439.000.
Magai, Donald E., 4,358,709, Cl. 315-99.000.
Magai, Donald E., 4,358,710, Cl. 315-101.000.
Mark, Victor, 4,358,613, Cl. 564-238.000.
Mark, Victor; and Hedges, Charles V., 4,358,624, Cl. 568-722.000.
Quinn, Clayton B.; and Hilakos, William, 4,358,563, Cl. 525-146.000.
Quinn, Clayton B.; and Rosenquist, Niles R., 4,358,569, Cl. 525-439.000.
Soileau, Trasimond A., 4,358,816, Cl. 362-346.000.
Stivender, Paul M.; and Barrett, David M., 4,358,856, Cl. 378-167.000.
van Abeelen, Petrus C. A. M., 4,358,556, Cl. 524-267.000.
Zlupko, John E.; and Damsky, Ben L., 4,358,747, Cl. 337-273.000.
General Electric Company Silicone Products Business Division: *See—*
Lampe, Warren R.; Mitchell, Tyrone D.; and Cella, James A., 4,358,575, Cl. 528-17.000.
General Foods Inc.: *See—*
Dolan, Francis H.; and Conner, Michael S., 4,358,468, Cl. 426-250.000.
General Kinematics Corporation: *See—*
Musschoot, Albert, 4,357,760, Cl. 34-56.000.
General Motors Corporation: *See—*
Goodrich, Stanley R., Jr.; and Roethlisberger, Jerry M., 4,358,211, Cl. 403-27.000.
Jones, Richard A., 4,358,517, Cl. 429-206.000.
Jubelt, Warren L., 4,358,482, Cl. 427-259.000.
Lundquist, Roger J., 4,358,372, Cl. 210-172.000.
Matter, Robert C., 4,358,518, Cl. 429-245.000.
Stevenson, Robin, 4,358,325, Cl. 148-125.000.
General Signal Corporation: *See—*
Schutte, Marlin D., 4,358,206, Cl. 366-262.000.
General Tire & Rubber Company, The: *See—*
Hill, Lawrence I., 4,358,499, Cl. 428-220.000.
Georg Fischer Aktiengesellschaft: *See—*
Buhrer, Erwin, deceased; Brandli, Grete, heir; Roth, Lotte, heir; and Baumann, Doris, heir, 4,357,984, Cl. 164-37.000.
George Fischer Ltd.: *See—*
Hiltebrand, Eduard, 4,358,086, Cl. 251-306.000.
George Koch Sons, Inc.: *See—*
Williams, Stanley E., 4,357,966, Cl. 140-71.00R.
George, Peter K., to National Semiconductor Corporation. Bubble memory with enhanced bit density storage area. 4,358,830, Cl. 365-39.000.
George, Stephen; and George, Thomas, to Subtex, Inc. Flame resistant insulating fabric compositions containing inorganic bonding agent. 4,358,500, Cl. 428-246.000.
George, Thomas: *See—*
George, Stephen; and George, Thomas, 4,358,500, Cl. 428-246.000.
Gerber, Russell W.: *See—*
Moyes, William C.; Gerber, Russell W.; and Ehrbar, Richard, 4,358,277, Cl. 434-322.000.
Geschwender, Robert C., to Concept Engineering, Inc. Utility cart. 4,358,124, Cl. 280-47.180.
Gesellschaft fur Kernenergieverwertung in Schiffbau und Schiffahrt mbH: *See—*
Marten, Rainer; Rosomm, Herbert; and Schwenke, Heinrich, 4,358,854, Cl. 378-45.000.
Ghosh, Peter; Ternai, Bela; and Whitehouse, M. W., to Pierce Chemical Company. 4-Chloro-7-sulphobenzofurazan and salts thereof; new fluorigenic thiol specific reagents. 4,358,595, Cl. 548-126.000.
Gibson, George W.; Mahon, Joseph P.; McAulay, John; and Wolper, Stanley M., to Otis Elevator Company. Between landing car door safety lock. 4,357,998, Cl. 187-49.000.
Gijrath, Johannes H. N.; Van Liempd, Albertus A. M.; Versteegen, Hendrik S. A.; Van Der Geer, Josephus J.; and Van Der Avoort, Henricus J. M., to U.S. Philips Corporation. Color tube shadow mask mount. 4,358,702, Cl. 313-404.000.
Gismervik, Jan E.: *See—*
Sveinsbo, Gunnar; and Gismervik, Jan E., 4,357,892, Cl. 114-270.000.
Gist-Brocades N.V.: *See—*
Bijlenga, Gosse, 4,358,438, Cl. 424-89.000.
Henniger, Peter W.; van der Drift, Johannes K.; van Veen, Gerard J.; and Kapur, Jagdish C., 4,358,588, Cl. 544-030.000.
Giudici, Franco: *See—*
Perrone, Ettore; Nannini, Giuliano; Alpegiani, Marco; Giudici, Franco; and Meinardi, Giuseppe, 4,358,448, Cl. 424-246.000.
Glaesener, Ernest, to Arbed S.A. Sound barrier for highway and other traffic. 4,358,090, Cl. 256-13.100.
Gleason, Joseph P.; and Posthumus, Harry G., to Magnavox Company, The. Communication system. 4,358,857, Cl. 455-26.000.
Gless, Richard D., Jr., to Stauffer Chemical Company. Process for production of α-haloalkylamides. 4,358,612, Cl. 564-137.000.
Glickman, David; Repass, James T.; Rosenbaum, Walter S.; and Russell, Janet G., to International Business Machines Corporation. Office correspondence storage and retrieval system. 4,358,824, Cl. 364-200.000.
Glockler, Otto: *See—*
Kraus, Bernd; and Glockler, Otto, 4,357,829, Cl. 73-204.000.
Goedde, Franz; Redlich, Rudolf; and Riecker, Johann, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Method for quenching coke. 4,358,343, Cl. 201-1.000.
Goettel, Mary E.: *See—*
Jones, Charles D.; and Goettel, Mary E., 4,358,593, Cl. 546-202.000.
Goldberg, Paul R.; and Doward, Colin J., to Wavetek Indiana, Inc. Apparatus and method for processing heat developed photosensitive recording material. 4,358,192, Cl. 354-299.000.
Goldfarb, Adolph E. Learning and matching apparatus and method. 4,358,278, Cl. 434-337.000.
Goldman, Dorothee F. E. Fertility indicator system containing anthocyanin pigment. 4,358,288, Cl. 23-230.00B.
Golubkov, Boris P.; Fedorov, Svyatoslav N.; Durnev, Valery V., deceased; and by Durneva, Tamara S., administratrix. Instrument for marking out the central optical zone of the cornea. 4,357,941, Cl. 128-316.000.
Goodell, Paul D.: *See—*
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,358,396, Cl. 252-430.000.
Goodrich, Stanley R., Jr.; and Roethlisberger, Jerry M., to General Motors Corporation. Pivot joint with visual preload indicator. 4,358,211, Cl. 403-27.000.
Goodwin, Walter E., Jr. Sprinkler head grass clipper. 4,357,752, Cl. 30-122.000.
Goodyear Tire & Rubber Company, The: *See—*
Perkins, William G.; and Schriver, Clem B., 4,358,492, Cl. 428-35.000.
Goralski, Christian T., to Dow Chemical Company & Merrell Dow Pharmaceuticals Incorporated, The. Glaucine phosphate chunky prismatic crystals. 4,358,592, Cl. 546-075.000.
Gossoo, Rodney W.: *See—*
Fischer, Charles P.; Peterson, Andrew A.; Doi, Edward J.; Gossoo, Rodney W.; and Mitrzyk, Jan C., Sr., 4,357,742, Cl. 29-33.00M.
Goudey, Clifford A., to Massachusetts Institute of Technology. Release mechanism. 4,358,146, Cl. 294-84.000.
Grabner, Julius, to Voest-Alpine Aktiengesellschaft. Exothermic reaction, system for supplying a reactant gas and a shielding fluid to a reactor, and control signal generating circuit for use in said system. 4,358,092, Cl. 266-82.000.
Graco Metal Products, Inc.: *See—*
Saint, David; Eldon, James, III; and Latone, Thomas L., 4,357,735, Cl. 16-224.000.
Grady, Clyde C., II. Structural units and arrays therefrom. 4,357,784, Cl. 52-585.000.
Graf & Cie. A.G.: *See—*
Siegrist, Werner, 4,357,738, Cl. 19-114.000.
Graham, Henry A., Jr.; Olekna, David J.; Hawk, Johnna B.; and Kebles, Diane B., to Ortho Diagnostics, Inc. Blood typing tests and reagents. 4,358,436, Cl. 424-11.000.
Graham, William J., to Texaco Inc. Apparatus for confining the effluent of an offshore uncontrolled well. 4,358,218, Cl. 405-60.000.
Gramm, Raymond J. Carrier for ski equipment. 4,358,137, Cl. 280-814.000.
Granda, Edward J.: *See—*
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,357,949, Cl. 131-276.000.
Grandfils, Pierre: *See—*
Blanpain, Guy; and Grandfils, Pierre, 4,358,224, Cl. 405-298.000.
Granzer, Ernold: *See—*
Gebert, Ulrich; Granzer, Ernold; Greve, Heinz-Gunter; and Thorwart, Werner, 4,358,450, Cl. 424-250.000.
Grapha-Holding AG: *See—*
Muller, Hans, 4,358,100, Cl. 271-11.000.
Gray, John: *See—*
Pont, Richard S.; and Gray, John, 4,358,266, Cl. 431-90.000.
Gray, Leslie M., to Bolt Beranek and Newman Inc. Low noise fan. 4,358,245, Cl. 416-189.000.
Green, Alfred J., to Adhesives Research, Inc. Mounting tape. 4,358,489, Cl. 428-31.000.
Green Line, Inc.: *See—*
Wedman, Thomas W., 4,357,858, Cl. 92-128.000.
Greenhut, Bart E.; and Saphir, Oded, to Emmett Laboratories, Inc. Shower dispenser. 4,358,056, Cl. 239-305.000.
Greiner, Hans-Joachim; and Saalfrank, Werner, to Siemens Aktiengesellschaft. X-Ray diagnostic installation comprising a timing device. 4,358,684, Cl. 378-98.000.
Greve, Heinz-Gunter: *See—*
Gebert, Ulrich; Granzer, Ernold; Greve, Heinz-Gunter; and Thorwart, Werner, 4,358,450, Cl. 424-250.000.

Griekspoor, Wilfred: *See—*
van der Pot, Barend J. G.; and Griekspoor, Wilfred, 4,358,225, Cl. 405-303.000.

Griffith-Hope Company: *See—*
Filipowicz, Edwin A.; and Cornell, Robert W., 4,358,169, Cl. 312-39.000.

Griffith, Seborn E. Vehicle load retaining apparatus. 4,358,232, Cl. 410-100.000.

Groetschel, Karl M. Apparatus for supporting the roof of an underground mine working. 4,358,159, Cl. 299-33.000.

Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, to L'Oreal. Cosmetic hair dye composition based on a powder of vegetable origin. 4,358,286, Cl. 8-405.000.

Grudzinskas, Charles V.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,358,605, Cl. 560-121.000.

Gruen, Dieter M.: *See—*
Mendelsohn, Marshall H.; and Gruen, Dieter M., 4,358,429, Cl. 423-248.000.

Grundfos A/S: *See—*
Jensen, Niels D.; and Nielsen, Kurt F., 4,358,299, Cl. 55-204.000.

Grundland, Nathan. Selectably positionable rotary transducers. 4,358,694, Cl. 310-49.00R.

Gruner, Heiko; and Zimmermann, Georg, to Robert Bosch GmbH. Thin film circuit. 4,358,748, Cl. 338-25.000.

GTE Laboratories Incorporated: *See—*
Norden, Alexander R., 4,358,650, Cl. 200-153.00H.
Proud, Joseph M.; Auborn, James J.; and Bessett, Richard A., 4,358,641, Cl. 179-113.000.

GTE Products Corporation: *See—*
Roche, William J.; and Anderson, John W., Jr., 4,358,701, Cl. 313-197.000.

Gulati, Suresh T.; and Scherer, George W., to Corning Glass Works. Gradient index optical waveguide and method of making. 4,358,181, Cl. 350-96.310.

Gulf & Western Manufacturing Co.: *See—*
Mark, Seymour, 4,358,293, Cl. 44-51.000.

Gurtner, Michel. Motor-vehicle driving instruction and testing apparatus. 4,358,272, Cl. 434-62.000.

Guslawski, Waldemar: *See—*
Halpern, Ernst; Kline, Morris; Guslawski, Waldemar; and Kukke, Gopal S., 4,357,993, Cl. 187-1.00R.

Gutierrez Atencio, Francisco J. Functionally transformable dam. 4,358,220, Cl. 405-75.000.

Gutsche, Klaus: *See—*
Scharwachter, Peter; Gutsche, Klaus; Kohlmann, Wilhelm; Hartleben, York; and Heberle, Wolfgang, 4,358,458, Cl. 424-273.00R.

Guy, Rodney J., to Western Electric Company, Inc. Hood for multicontact connector. 4,358,178, Cl. 339-103.00R.

Gylland, E. Frederick, Jr.: *See—*
Paton, H. Neil; Skilling, John B.; Sandys, Jeffrey P.; and Gylland, E. Frederick, Jr., 4,358,096, Cl. 267-9.00C.

Haag, Werner O.; Olson, David H.; and Rodewald, Paul G., to Mobil Oil Corporation. Hydrogen regeneration of coke-selectivated crystalline aluminosilicate catalyst. 4,358,395, Cl. 252-411.00R.

Haas, Rudi. Geometric figure building set. 4,358,115, Cl. 273-157.00R.

Hagyu, Toshimasa: *See—*
Akimoto, Mamoru; Konno, Kazushi; and Hagyu, Toshimasa, 4,357,751, Cl. 29-879.000.

Halcon SD Group, Inc., The: *See—*
Porcelli, Richard V.; and Bhise, Vijay S., 4,358,411, Cl. 260-546.000.

Hale, Joseph F., to GAF Corporation. Diazo development apparatus. 4,358,193, Cl. 354-299.000.

Hall, Ellis C. Hydraulic well equipment hoist. 4,357,994, Cl. 187-17.000.

Hall, John B.: *See—*
Sprecker, Mark A.; and Hall, John B., 4,358,617, Cl. 568-373.000.

Hallerback, Stig L., to Aktiebolaget SKF. Stator assembly for an electric motor. 4,358,692, Cl. 310-42.000.

Halpern, Ernst; Kline, Morris; Guslawski, Waldemar; and Kukke, Gopal S., to Williamsburg Steel Products Co. Inc. Elevator cab construction. 4,357,993, Cl. 187-1.00R.

Hama, Yoshihisa: *See—*
Ota, Akiho; Nishikawa, Masanori; Hattori, Masao; Tsuboi, Akio; Hama, Yoshihisa; Okudaira, Tadashi; and Sugihara, Shigeharu, 4,358,491, Cl. 428-35.000.

Hamada, Masa: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; Kondo, Shinichi; and Ishizuka, Masaaki, 4,358,602, Cl. 549-328.000.

Hamada, Yoshikazu, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Noise prevention device in an automobile locking apparatus. 4,358,141, Cl. 292-216.000.

Hamane, Tokuhito; Kinoshita, Toshio; and Kihira, Masafumi, to Matsushita Electrical Industrial Co. Ltd. Stator core holding device for fabricating a stator assembly for an electrical machine. 4,358,099, Cl. 269-93.000.

Hamilton, C. Howard: *See—*
Mahoney, Murray W.; Hamilton, C. Howard; and Paton, Neil E., 4,358,324, Cl. 148-12.70A.

Hamilton, Lewis R.: *See—*
Sutton, Richard C.; Brust, David P.; and Hamilton, Lewis R., 4,358,524, Cl. 430-213.000.

Hammen, Theodor: *See—*
Mohacsi, Sandor; Hammen, Theodor; and Schmid, Walter, 4,357,879, Cl. 105-199.00R.

Hamrin, Charles E., Jr.: *See—*
Liu, Kindtoken H. D.; and Hamrin, Charles E., Jr., 4,358,398, Cl. 252-440.000.

Han, Helen, to Bittinger, Arthur S. Plumbing method and composition for use in same. 4,357,960, Cl. 138-97.000.

Hanahara, Keishi, to Fujitsu Limited. Spectrum analyzer without distinct band-pass filter components. 4,358,733, Cl. 324-77.00E.

Hand, William A. Encompass drapery support assembly. 4,357,983, Cl. 160-345.000.

Haner, Lambert, to Commercial Shearing, Inc. Solid state servo amplifier for a D.C. motor position control system. 4,358,724, Cl. 318-681.000.

Hannah, John, to Merck & Co., Inc. 7-*N*-Heterocyclyl cephalosporins. 4,358,447, Cl. 424-246.000.

Hannibal, Billy B., to Tecumseh Products Company. Variable capacity compressor. 4,358,254, Cl. 417-419.000.

Hansen, Glen D.: *See—*
Buschbom, Floyd E.; and Hansen, Glen D., 4,358,011, Cl. 198-861.000.

Hansen, Richard F.: *See—*
Laughlin, James L.; and Hansen, Richard F., 4,358,138, Cl. 280-819.000.

Hanson, Clark L., to United States of America, Energy. Vacuum chamber with a supersonic flow aerodynamic window. 4,358,249, Cl. 417-179.000.

Hanson, Donald B.; and Metzger, Frederick B., to United Technologies Corporation. Noise reduction means for prop-fan and the construction thereof. 4,358,246, Cl. 416-223.00R.

Hara, Kazumasa; and Koike, Mikio, to Janome Sewing Machine Co. Ltd. Loop catching device for lock stitching sewing machines. 4,357,887, Cl. 112-158.00E.

Hara, Yoshiaki: *See—*
Horikoshi, Ichiro; Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; and Fujita, Susumu, 4,358,642, Cl. 179-115.50R.

Harada, Chosei: *See—*
Nishikawa, Yoshiyasu; Harada, Chosei; and Nakano, Masao, 4,358,244, Cl. 416-186.00R.

Harada, Taichi: *See—*
Sato, Munekazu; Nishimura, Muneo; and Harada, Taichi, 4,358,813, Cl. 361-263.000.

Harada, Tatsuo: *See—*
Moriyama, Shigeo; Harada, Tatsuo; and Ito, Masaaki, 4,358,198, Cl. 355-53.000.

Harada, Tooru: *See—*
Fujita, Shinsaku; Itoh, Isamu; Ono, Shigetoshi; Harada, Tooru; and Yoshida, Yoshinobu, 4,358,526, Cl. 430-223.000.

Haran, Jack P.: *See—*
Johnson, Eugene R.; and Haran, Jack P., 4,358,337, Cl. 156-526.000.

Harben System Limited: *See—*
Hart, Bernard E., 4,358,252, Cl. 417-387.000.

Hardy, Nicolas, to Propylox (Societe Anonyme). Process for the recovery of carboxylic acid from mixtures containing glycol esters derived from these acids. 4,358,609, Cl. 562-606.000.

Hares, George B.; Kerko, David J.; and Morse, David L., to Corning Glass Works. Photochromic glass suitable for microsheet and simultaneous heat treatment and shaping. 4,358,542, Cl. 501-13.000.

Harnischfeger Corporation: *See—*
Dechantsreiter, Max J., 4,358,239, Cl. 414-661.000.

Harris, Charles G.; Mora, Erwin P.; Singh, Mahendra P.; and Solberg, David P., to Dana Corporation. Controller for variable air volume cooling system. 4,357,806, Cl. 62-186.000.

Hart, Bernard E., to Harben System Limited. Diaphragm pumps. 4,358,252, Cl. 417-387.000.

Hart, Patrick J., to Texas Instruments Incorporated. Thyristor driver controller for reactive loads and method of operation thereof. 4,358,729, Cl. 323-322.000.

Hartlaub, Jerome T.: *See—*
Thompson, David L.; Hartlaub, Jerome T.; and Stein, Marc T., 4,357,943, Cl. 128-419.0PG.

Hartleben, York: *See—*
Scharwachter, Peter; Gutsche, Klaus; Kohlmann, Wilhelm; Hartleben, York; and Heberle, Wolfgang, 4,358,458, Cl. 424-273.00R.

Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See—*
Goedde, Franz; Redlich, Rudolf; and Riecker, Johann, 4,358,343, Cl. 201-1.000.

Hasegawa, Masami; Sakai, Utaro; and Naitoh, Takahisa, to Nissan Motor Co., Ltd.; and Maruchi Kohken Co., Ltd. Method of reproducing water-soluble cutting agents. 4,358,380, Cl. 210-679.000.

Hashimoto, Yasuyuki; and Torii, Osamu, to Ancos Co., Ltd. Mechanical pencil with chuck closing by normal writing grip. 4,358,210, Cl. 401-65.000.

Hashimoto, Yukio, to Citizen Watch Company Limited. Voltage control circuit responsive to FET propagation time. 4,358,728, Cl. 323-275.000.

Hasty, Stephen E.: *See—*
Johnson, Ronald S.; and Hasty, Stephen E., 4,358,667, Cl. 219-331.000.

Hattori, Masao: *See—*
Ota, Akiho; Nishikawa, Masanori; Hattori, Masao; Tsuboi, Akio; Hama, Yoshihisa; Okudaira, Tadashi; and Sugihara, Shigeharu, 4,358,491, Cl. 428-35.000.

Hattori, Tadashi; Yamaguchi, Hiroaki; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Ignition timing control apparatus for internal combustion engines. 4,357,919, Cl. 123-425.000.
Hattori, Tadashi: *See*—
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,357,825, Cl. 73-35.000.
Haubrich, Raymond O. Plastic bag holder. 4,358,083, Cl. 248-545.000.
Haupt, David L.: *See*—
Van Blarigan, Peter; and Haupt, David L., 4,358,658, Cl. 219-121.0LC.
Hauser, Kurt, to Suddeutsche Kuhlerfabrik, Julius Fr. Behr GmbH & Co. KG. Cooling system for internal combustion engines. 4,357,914, Cl. 123-41.490.
Hawk, Johnna B.: *See*—
Graham, Henry A., Jr.; Olekna, David J.; Hawk, Johnna B.; and Kebles, Diane B., 4,358,436, Cl. 424-11.000.
Hawkins, Harold R.; Gardner, Clive A.; Roke, Lindsey J.; Clark, Richard J.; and Rumble, Warwick F., to Fishel & Paykel Limited. Joining member and/or a joint. 4,358,213, Cl. 403-231.000.
Hay, Louis E.; and Mercer, Roger W. Plasterless mounting dental articulator. 4,358,269, Cl. 433-60.000.
Hay, Louis E.: *See*—
Carpenter, Robert W., 4,357,905, Cl. 119-61.000.
Hayama, Kazuhide; and Narazaki, Kanji, to Mitsubishi Petrochemical Company Limited. Resins for hairdressings. 4,358,567, Cl. 525-359.400.
Hayashi, Katsumi: *See*—
Takagi, Yoshihiro; and Hayashi, Katsumi, 4,358,528, Cl. 430-251.000.
Hayes, Robert B.; and Pompei, Arturo, to Boeing Company, The. Composite window for a vehicle entrance door. 4,358,182, Cl. 350-287.000.
Hayes, William V.; and Childress, David L., to Dow Chemical Co., The. Process for the preparation of ethylenimine. 4,358,405, Cl. 260-239.00E.
Hazleton Systems, Inc.: *See*—
Moss, Owen R.; Clark, Mark L.; and Rossignol, E. John, 4,357,903, Cl. 119-15.000.
Healy, Benedict P.: *See*—
Dowell, Frederick S.; and Healy, Benedict P., 4,358,004, Cl. 188-217.000.
Heath, Oran M. Multiple rotary wind power systems. 4,358,243, Cl. 416-11.000.
Hebard, Arthur F.; and Vandenberg, Joanna M., to Bell Telephone Laboratories, Incorporated. Superconducting thin films. 4,358,783, Cl. 357-5.000.
Heberle, Wolfgang: *See*—
Scharwachter, Peter; Gutsche, Klaus; Kohlmann, Wilhelm; Hartleben, York; and Heberle, Wolfgang, 4,358,458, Cl. 424-273.00R.
Hecker, Walter G. Rotary heat engine. 4,357,800, Cl. 60-519.000.
Hedges, Charles V.: *See*—
Mark, Victor; and Hedges, Charles V., 4,358,624, Cl. 568-722.000.
Hedlund, Lee V.; and Mathys, Richard E., Sr., to RCA Corporation. Special effects system. 4,358,798, Cl. 360-73.000.
Heemskerk, Jacobus P. J.; Renes, Hendrik; and Simons, Carel A. J., to U.S. Philips Corporation. Optical focussing-error detection system. 4,358,200, Cl. 356-123.000.
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., to Janssen Pharmaceutica, N.V. 1-(1,3-Dioxolan-2-ylmethyl)-1H-1,2,4-triazoles and compositions. 4,358,449, Cl. 424-248.580.
Hefter, Josef; Heitmann, Peter; Link, Christoph; Schultz, Hans-Joachim; Stotz, Wolf-Gunter; and Volz, Karl, to Escher Wyss Limited. Controlled deflection roll. 4,357,743, Cl. 29-116.0AD.
Heggenstaller, Anton. Method and apparatus for making compressed composite bodies of plant particles and binder. 4,358,418, Cl. 264-108.000.
Heidecker, Hanns. Systems for holding small articles in a load compartment. 4,358,035, Cl. 224-42.420.
Heideman, Robert C., to Amco Manufacturing Corporation. Modular luggage rack with accessories. 4,358,037, Cl. 224-321.000.
Heise, Richard L.: *See*—
Webster, Sherwood F.; and Heise, Richard L., 4,358,414, Cl. 261-53.000.
Heitmann, Peter: *See*—
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Held, Edward J.; and Broder, Daniel, to THAT Distributing Company, Inc. Cooling arrangement including a gel. 4,357,809, Cl. 62-457.000.
Hellsten, Karl M. E.; and Klingberg, Anders W., to Berol Kemi AB. Process for the froth flotation of calcium phosphate-containing minerals and flotation agents therefor. 4,358,368, Cl. 209-167.000.
Helm, Percy R.; and Morrow, James G., Sr., to Manitowoc Company, Inc., The. Separated ring segment dual pivot lift crane. 4,358,021, Cl. 212-195.000.
Hemex Incorporated: *See*—
Klawitter, Jerome J., 4,357,715, Cl. 3-1.500.
Henniger, Peter W.; van der Drift, Johannes K.; van Veen, Gerard J.; and Kapur, Jagdish C., to Gist-Brocades N.V. Process for preparing cephalosporanic acid compounds. 4,358,588, Cl. 544-030.000.
Henningsen Foods, Inc.: *See*—
Bergquist, Dwight H., 4,358,341, Cl. 159-4.00B.
Henoch, Bengt; and Berglind, Eilert, to Stiftelsen Institutet for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm. Apparatus for producing a single side band. 4,358,765, Cl. 343-6.5SS.
Henrick, Clive A.: *See*—
Lee, Shy-Fuh; and Henrick, Clive A., 4,358,606, Cl. 560-163.000.
Henry, Ronald A.: *See*—
Reed, Russell, Jr.; Lee, Benjamin Y. S.; and Henry, Ronald A., 4,358,327, Cl. 149-19.400.
Hepworth, Edward C.: *See*—
Kyu, Shikun; and Hepworth, Edward C., 4,358,825, Cl. 364-200.000.
Heraeus Edelmetalle GmbH: *See*—
Sperner, Franz; and Brink, Heidi, deceased, 4,358,271, Cl. 433-201.000.
Herbert, Adolf, to Hermann Berstorff Maschinenbau GmbH. Filter or tool-changing device for screw extruders. 4,358,262, Cl. 425-185.000.
Hercules Incorporated: *See*—
Jacono, Louis; and Mumper, Thomas O., 4,358,550, Cl. 523-348.000.
Hergeth KG Maschinenfabrik und Apparatebau: *See*—
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Hermann Berstorff Maschinenbau GmbH: *See*—
Herbert, Adolf, 4,358,262, Cl. 425-185.000.
Hersey Products, Inc.: *See*—
Lawrence, William R., 4,358,678, Cl. 250-227.000.
Hesston Corporation: *See*—
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Heuer, Christopher E.: *See*—
Jahns, Hans O.; Heuer, Christopher E.; and Hsu, Hsiu-Hsyong, 4,358,223, Cl. 405-157.000.
Heymanns, Lothar; and vom Dorp, Heinz, to Wilhelm Hegenscheidt Gesellschaft mbH. Apparatus for power clamping work pieces. 4,358,122, Cl. 279-2.00A.
Heynisch, Hinrich, to Siemens Aktiengesellschaft. Supporting system for the delay line of a travelling wave tube. 4,358,705, Cl. 315-3.500.
Hibi, Hitoshi: *See*—
Naganoma, Masanori; Kondo, Nobuo; Senda, Eiichi; Hibi, Hitoshi; Suzuki, Kunihiko; Ohta, Nobuyoshi; and Ito, Katsunori, 4,358,050, Cl. 236-13.000.
Hickman, David H. Automatic door closer kit. 4,357,732, Cl. 16-81.000.
Hidassy, Laszlo: *See*—
Netta, Louis A.; and Hidassy, Laszlo, 4,357,970, Cl. 140-123.600.
Hideg, Laszlo, to Ford Motor Company. Fuel metering system for an internal combustion engine. 4,357,923, Cl. 123-492.000.
Hilakos, William: *See*—
Quinn, Clayton B.; and Hilakos, William, 4,358,563, Cl. 525-146.000.
Hill, Lawrence I., to General Tire & Rubber Company, The. Dimensionally stable PVC roof membrane. 4,358,499, Cl. 428-220.000.
Hille, Eduard, to Hergeth KG Maschinenfabrik und Apparatebau. Apparatus for laying fiber fleeces or the like on a moving withdrawal belt. 4,357,739, Cl. 19-163.000.
Hillier, Raymond G. Keel roller. 4,358,008, Cl. 193-37.000.
Hiltebrand, Eduard, to George Fischer Ltd. Butterfly valve. 4,358,086, Cl. 251-306.000.
Hilti Aktiengesellschaft: *See*—
Leibhard, Erich; and Popp, Franz, 4,358,030, Cl. 222-146.00H.
Hind, Robert D., to USS Engineers and Consultants, Inc. Sliding gate valve with orifice-encircling spring. 4,358,034, Cl. 222-600.000.
Hinz, Gerhard: *See*—
Mayer, Gustav; Hinz, Gerhard; Muhs, Herbert; Sturmfels, Georg; and Burger, Hartmut, 4,358,152, Cl. 296-188.000.
Hiorth, Hans, to Dyno Industrier A/S. Building for detonating explosives. 4,357,882, Cl. 109-1.00S.
Hirano, Hiroshi, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic rhythm performance device. 4,357,854, Cl. 84-1.030.
Hirayama, Kazuhiro, to Canon Kabushiki Kaisha. Method of stabilizing an electrostatic latent image. 4,358,520, Cl. 430-54.000.
Hirayama, Yoshio: *See*—
Itoh, Kanichi; Hirayama, Yoshio; and Kodaira, Masanori, 4,358,540, Cl. 435-316.000.
Hirose, Kenji: *See*—
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,358,722, Cl. 318-661.000.
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,358,726, Cl. 318-798.000.
Hirsch, Arthur, to Arvey Corporation. Pressure sensitive closure pouch with insertable sterilization indicator. 4,358,015, Cl. 206-439.000.
Hitachi, Ltd.: *See*—
Moriyama, Shigeo; Harada, Tatsuo; and Ito, Masaaki, 4,358,198, Cl. 355-53.000.
Nishijima, Hideo; Fukushima, Isao; and Yokota, Hajime, 4,358,797, Cl. 360-14.200.
Suzuki, Toshitsugu; and Tuchida, Masayuki, 4,358,247, Cl. 417-13.000.
Hitachi Shipbuilding & Engineering Company Limited: *See*—
Yamamoto, Masahiko; Nishino, Yoshinori; Wada, Masao; and Ebisu, Tomio, 4,358,264, Cl. 425-425.000.
Hoechst Aktiengesellschaft: *See*—
Brandt, Lothar; and Holst, Arno, 4,358,587, Cl. 536-90.000.
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,358,312, Cl. 75-58.000.
Gebert, Ulrich; Granzer, Ernold; Greve, Heinz-Gunter; and Thorwart, Werner, 4,358,450, Cl. 424-250.000.
Konig-Lumer, Inge; Schwenk, Ulrich; Salvador, Rene; and Kapfinger, Josef, 4,358,389, Cl. 252-70.000.
Sulzbach, Reinhard A., 4,358,348, Cl. 203-67.000.

Hoehn, Marvin M.: *See*—
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Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, to Bayer Aktiengesellschaft. Preparation of styryl cyclopropane insecticide intermediates. 4,358,409, Cl. 260-465.00G.
Hoffmann, Werner: *See*—
Janitschke, Lothar; and Hoffmann, Werner, 4,358,614, Cl. 564-248.000.
Hohn, Richard; Jung, Werner; and Winter, Gerhard, to Robert Bosch GmbH. Metalized recording medium. 4,358,779, Cl. 346-135.100.
Hokushin Electric Works, Ltd.: *See*—
Kayama, Nagaoki, 4,357,835, Cl. 73-861.170.
Kimura, Atsushi, 4,357,834, Cl. 73-708.000.
Holcomb, Allen G.; and Spoo, Bruce H., to Minnesota Mining and Manufacturing Company. Tacky fluoroelastomer compositions. 4,358,559, Cl. 524-380.000.
Holdsworth, Robert S., to W. R. Grace & Co. Method of removing water from water base can sealant. 4,357,759, Cl. 34-9.000.
Holland-Letz, Gunter, to Esselte Pendaflex Corporation. Apparatus for printing, dispensing and applying pressure-sensitive labels adhering to a carrier tape. 4,358,333, Cl. 156-384.000.
Hollandsche Beton Groep N.V.: *See*—
van der Pot, Barend J. G.; and Griekspoor, Wilfred, 4,358,225, Cl. 405-303.000.
Holst, Arno: *See*—
Brandt, Lothar; and Holst, Arno, 4,358,587, Cl. 536-90.000.
Holzhauer, Juergen K.: *See*—
Kuhlmann, George E.; and Holzhauer, Juergen K., 4,358,600, Cl. 549-262.000.
Holzle, Ross G., to Texaco Inc. Heat exchange circuit for an offshore installation. 4,357,989, Cl. 165-45.000.
Homann, Thorsten: *See*—
Knuth, Manfred; and Homann, Thorsten, 4,357,865, Cl. 100-117.000.
Homeyer, Harald H. H. Glass fibre reinforced plastic sheeting material. 4,358,503, Cl. 428-285.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ban, Keisuke; Daimaru, Akimasa; and Miyake, Noriaki, 4,357,986, Cl. 164-97.000.
Shiraishi, Motoatsu; Matsuda, Tatsushi; and Sano, Masao, 4,358,263, Cl. 425-397.000.
Honeywell Inc.: *See*—
Chang, Kuo H.; Lee, Tzuo-Chang; and Lin, Jacob W., 4,358,519, Cl. 430-2.000.
Frazier, James H., 4,358,674, Cl. 250-204.000.
Frazier, James H.; and Wittenberger, John C., 4,358,675, Cl. 250-204.000.
Garoutte, Kurt F.; and Michener, Curtis J., 4,358,514, Cl. 429-181.000.
Wittenberger, John C., 4,358,673, Cl. 250-204.000.
Honma, Tsunetoshi: *See*—
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Hope Plastics Corporation: *See*—
Hope, William K., Sr.; and Frederick, David C., 4,357,791, Cl. 57-122.000.
Hope, William K., Sr.; and Frederick, David C., to Hope Plastics Corporation. Noise and vibration dampening ring mount. 4,357,791, Cl. 57-122.000.
Hopkins, Jack R. Dressing device for shaping grinding wheels. 4,357,928, Cl. 125-11.00F.
Hori, Takanobu; and Yoshida, Motoharu, to Aisin Seiki Kabushiki Kaisha. Multiblade plastic fan. 4,357,913, Cl. 123-41.490.
Horikoshi, Ichiro; Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; and Fujita, Susumu, to Kabushiki Kaisha Daini Seikosha. Electromagnetic type electric acoustic transducer. 4,358,642, Cl. 179-115.50R.
Hosaka, Yasuo; and Yana, Masasumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Beam scanning copying apparatus. 4,358,793, Cl. 358-286.000.
Hoshizaki, Tatsuji; and Seto, Yutaka, to Konishiroku Photo Industry Co., Ltd. Copy paper feeding cassette. 4,358,102, Cl. 271-164.000.
Hostetler, Thomas E.; and Ellis, Ted J., Jr., to Bristol Corporation. Machine safety guard. 4,358,651, Cl. 200-334.000.
Houle, Bertrand: *See*—
Croteau, Lucien; Marchand, Alain; and Houle, Bertrand, 4,357,766, Cl. 37-281.000.
House, Lawrence A.; Kumpa, Vladimir; and Magnuson, John E., to PACCAR of Canada Ltd. Winch drive and braking mechanism. 4,358,088, Cl. 254-349.000.
Howard, Dennis D.: *See*—
Zimmer, David J.; Sexsmith, Frederick H.; and Howard, Dennis D., 4,358,476, Cl. 427-44.000.
Hoy, Robert W., to Peabody ABC Corporation. Coupling for mine ventilation conduits. 4,358,139, Cl. 285-332.300.
Hrabalek, Ernst. Device for the treatment of bulk material. 4,358,060, Cl. 241-65.000.
Hsieh, Kou-Chang, to Yamagata University. Power distribution type antenna. 4,358,771, Cl. 343-854.000.
Hsu, Hsiu-Hsyong: *See*—
Jahns, Hans O.; Heuer, Christopher E.; and Hsu, Hsiu-Hsyong, 4,358,223, Cl. 405-157.000.
Hubler, Stanley L., to RTS Systems, Inc. Bilateral current source for a multi-terminal intercom. 4,358,644, Cl. 179-170.0NC.
Hudson, David J.; and Francis, Willard P., to Safety Electrical Equipment Corp. Air-conditioning/heating system. 4,357,988, Cl. 165-26.000.
Hughes Aircraft Company: *See*—
Leggett, Hyman, 4,358,772, Cl. 343-872.000.
Hughes Tool Company: *See*—
Regan, John; and Watkins, Bruce J., 4,358,085, Cl. 251-1.00B.
Hughes, Vincent L., to Exxon Research & Engineering Co. Production of hydrocarbon resins and products resulting therefrom. 4,358,574, Cl. 526-339.000.
Hund, Franz: *See*—
Brunn, Horst; Kiemle, Peter; Hund, Franz; and Bade, Heribert, 4,358,431, Cl. 423-632.000.
Hung, Michael. Rapid actuating device of hydraulic actuator. 4,357,798, Cl. 60-477.000.
Hungerford, Emory D., to ESCO Corporation. Mounting and actuating apparatus for tongs. 4,358,147, Cl. 294-88.000.
Hunt, Albert A., to Ford Motor Company. Thermostat assembly for an engine cooling system. 4,358,051, Cl. 236-34.500.
Hunter, Edwin J., to Toro Company, The. Backflow preventing valve construction. 4,357,954, Cl. 137-218.000.
Huntington Alloys, Inc.: *See*—
Smith, Darrell F., Jr.; and Clatworthy, Edward F., 4,358,511, Cl. 428-595.000.
Husson, Alan L.; and Dynak, Michael J., to Westinghouse Electric Corp. Elevator system. 4,357,997, Cl. 187-29.00R.
Hutchings, LeRoi E.; and Conner, Algie J., to UOP Inc. Conversion of asphaltene-containing charge stocks. 4,358,365, Cl. 208-96.000.
Huth, Werner: *See*—
Simon, Franz; Huth, Werner; Dorbath, Bernd; and Zilske, Wolfgang, 4,358,351, Cl. 204-44.000.
Hyatt, Robert K.; and Jacobs, Robert F., to TeleMine Company, Inc., The. Pay per view television control device. 4,358,672, Cl. 235-380.000.
Hynes, Frank R.: *See*—
Kukucka, William P.; Hynes, Frank R.; Jones, Hugh L.; and Thompson, David M., 4,358,197, Cl. 355-14.00R.
Ichikawa, Hirokazu: *See*—
Tada, Masahiro; Ichikawa, Hirokazu; Fukushima, Mitsuo; Nakamichi, Koya; Ouchi, Koji; and Ishigaki, Yoshio, 4,358,769, Cl. 343-742.000.
Ichikawa, Shunsuke; and Tanaka, Masato, to Sony Corporation. Method of modulation and demodulation of data and apparatus for carrying out the same. 4,358,852, Cl. 375-25.000.
Ichikawa Woolen Textile Co., Ltd.: *See*—
Takeuchi, Tetsuo; and Nakamura, Shoichi, 4,358,381, Cl. 210-727.000.
ICI Australia Limited: *See*—
Kalu, Georgina; and Markus, Michael, 4,358,355, Cl. 204-159.160.
Serban, Alexander; Watson, Keith G.; and Farquharson, Graeme J., 4,358,307, Cl. 71-92.000.
Igarashi, Hitoshi, to Asahi Glass Company, Ltd. Apparatus for soldering solder on ceramic substrate. 4,358,044, Cl. 228-1.00R.
Igarashi, Isao: *See*—
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,357,916, Cl. 123-51.0BA.
Igarashi, Kikuo; Honma, Tsunetoshi; and Sugawara, Tamio, to Shionogi & Co., Ltd. 5-Deoxyapramycin. 4,358,585, Cl. 536-16.800.
Igashira, Toshihiko; Kawai, Hisasi; and Nomura, Ken, to Nippondenso Co., Ltd. Ignition device for a multi-cylinder internal combustion engine. 4,357,927, Cl. 123-622.000.
Iida, Kiichi; Kawamoto, Tadashi; and Miyoshi, Kazuhito, to Asahi Kasei Kogyo Kabushiki Kaisha. Urethane photosensitive resinous composition. 4,358,354, Cl. 204-159.150.
Iizuka, Haruhiko: *See*—
Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,357,924, Cl. 123-493.000.
Iizuka, Mitsuru; and Ishiyama, Yoshihiko, to Nissan Motor Co. Ltd. Ash tray for vehicle. 4,358,149, Cl. 296-37.900.
Ijff, Barend; and van de Hoef, Jozef P., to U.S. Philips Corporation. Multiple coaxial cable. 4,358,636, Cl. 174-103.000.
Ikekawa, Nobuo: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,358,406, Cl. 260-239.55R.
Ikena, Tosimasa: *See*—
Nakano, Shiro; Naito, Yoshiro; Nakamura, Shigeki; Ikena, Tosimasa; and Tanaka, Kazuo, 4,358,474, Cl. 427-12.000.
ILC Data Device Corporation: *See*—
Nardin, Roy, 4,358,741, Cl. 331-2.000.
Illinois Tool Works Inc.: *See*—
Pleickhardt, George C.; and Belisle, Philip R., 4,358,216, Cl. 403-387.000.
Imai, Hiroshi: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akiro; Katayama, Shitomi; and Nomura, Suguru, 4,358,507, Cl. 428-429.000.
IMI Santon Limited: *See*—
Owen, William G. S., 4,358,665, Cl. 219-306.000.
Imperial Chemical Industries Limited: *See*—
Coffee, Ronald A., 4,358,059, Cl. 239-691.000.
Padget, John C., 4,358,402, Cl. 525-192.000.
Imperial Chemical Industries PLC: *See*—
Walker, John; and Whitton, Jonathan R., 4,358,583, Cl. 528-491.000.

Inco Limited: *See*—
Victorovich, Grigori S.; Sridhar, Ramamritham; and Bell, Malcolm C. E., 4,358,430, Cl. 423-508.000.
Indo, Masahiro: *See*—
Tanaka, Eiichi; Furumai, Koro; Indo, Masahiro; and Kawabata, Norio, 4,358,265, Cl. 431-76.000.
Industrial and Overseas Securities Limited: *See*—
Davies, John B. C., 4,358,242, Cl. 414-746.000.
Inframetrics, Inc.: *See*—
Confer, Charles L., 4,358,789, Cl. 358-140.000.
Ingham, Herbert S.; and Dittrich, Ferdinand J., to Metco, Inc. Flame spraying device with rocket acceleration. 4,358,053, Cl. 239-79.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,358,655, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method and apparatus for electroerosion machining with a vibrating wire electrode. 4,358,655, Cl. 219-69.00M.
Inoue, Noboru. Process for refining electric insulating liquids. 4,358,379, Cl. 210-663.000.
Institut National de la Recherche Agronomioue: *See*—
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,358,465, Cl. 426-42.000.
Institute of Gas Technology: *See*—
Chynoweth, David P., 4,358,537, Cl. 435-162.000.
Intel Corporation: *See*—
Folmsbee, Alan C.; Kokkonen, Kim; and Spaw, William J., 4,358,833, Cl. 365-200.000.
Intel Magnetics, Inc.: *See*—
Silverman, Peter J., 4,358,356, Cl. 204-192.00E.
International Business Machines Corporation: *See*—
Ameen, Joseph G.; Joseph, Charles A.; Rivenburgh, Dennis L.; and Sissenstein, David W., 4,358,627, Cl. 570-238.000.
Bodner, Ronald E.; Crooks, Thomas L.; and Wottreng, Andrew H., 4,358,826, Cl. 364-200.000.
Canestaro, Michael J.; and Fey, Edmond O., 4,358,479, Cl. 427-98.000.
Cuomo, Jerome J.; and Woodall, Jerry M., 4,358,291, Cl. 44-3.00B.
Doo, Ven Y., 4,358,326, Cl. 148-174.000.
Glickman, David; Repass, James T.; Rosenbaum, Walter S.; and Russell, Janet G., 4,358,824, Cl. 364-200.000.
Jones, Dennis P.; and Pipkin, David J., 4,357,899, Cl. 118-665.000.
Keyes, Robert W., 4,358,745, Cl. 333-155.000.
Makosch, Gunter, 4,358,201, Cl. 356-351.000.
Patel, Arvind M., 4,358,848, Cl. 371-39.000.
Rigotti, James M., 4,358,209, Cl. 400-219.200.
Tompkins, James D., 4,358,831, Cl. 365-183.000.
International Flavors & Fragrances Inc.: *See*—
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,357,949, Cl. 131-276.000.
Sprecker, Mark A.; and Hall, John B., 4,358,617, Cl. 568-373.000.
International Harvester Company: *See*—
Rakow, Donald G., 4,358,303, Cl. 55-408.000.
International Nickel Company, Inc., The: *See*—
Merrick, Howard F.; Curwick, LeRoy R.; and Benn, Raymond C., 4,358,318, Cl. 420-449.000.
International Rectifier Corporation: *See*—
Wislocky, Joseph; and Roach, Thomas J., 4,358,784, Cl. 357-71.000.
International Telephone and Telegraph Corporation: *See*—
Johnson, Ronald S.; and Hasty, Stephen E., 4,358,667, Cl. 219-331.000.
Intrater, Josef; and Bertoldo, Gene. Metal and carbon composites thereof. 4,358,506, Cl. 428-408.000.
Inventing S.A.: *See*—
Wallsten, Hans I., 4,358,481, Cl. 427-211.000.
IRD Mechanalysis, Inc.: *See*—
Blackburn, Bobby J.; and Csokmay, John M., 4,357,832, Cl. 73-462.000.
Isago, Koki, to Ricoh Company, Ltd. Slit-exposure type illumination apparatus. 4,358,199, Cl. 355-70.000.
Ishidoshiro, Hiroshi: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,357,811, Cl. 68-5.00E.
Ishigaki, Yoshio: *See*—
Tada, Masahiro; Ichikawa, Hirokazu; Fukushima, Mitsuo; Nakamichi, Koya; Ouchi, Koji; and Ishigaki, Yoshio, 4,358,769, Cl. 343-742.000.
Ishiguro, Yasuo, to Konishiroku Photo Industry Co., Ltd.; and Kabushiki Kaisha Copal. Exposure rate controlling mechanism for camera. 4,358,191, Cl. 354-271.000.
Ishii, Toshiaki; and Masaki, Takanobu, to Mitsubishi Denki Kabushiki Kaisha. Speed control device for an elevator. 4,357,996, Cl. 187-29.00R.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Tachimoto, Kazuo; and Tanoue, Toyosuke, 4,358,415, Cl. 264-8.000.
Ishimaru, Kenzo: *See*—
Finney, Jack P.; and Ishimaru, Kenzo, 4,358,425, Cl. 422-102.000.
Ishino, Hirokichi: *See*—
Ohtsuki, Akira; Ishino, Hirokichi; and Sakai, Hiromu, 4,358,493, Cl. 428-35.000.
Ishiwata, Mamoru; and Minoda, Minoru, to Fuji Photo Film Co., Ltd. Film units for photography of diffusive transfer process type. 4,358,523, Cl. 430-207.000.
Ishiyama, Yoshihiko: *See*—
Iizuka, Mitsuru; and Ishiyama, Yoshihiko, 4,358,149, Cl. 296-37.900.
Ishizuka, Masaaki: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; Kondo, Shinichi; and Ishizuka, Masaaki, 4,358,602, Cl. 549-328.000.
Ito, Katsunori: *See*—
Naganoma, Masanori; Kondo, Nobuo; Senda, Eiichi; Hibi, Hitoshi; Suzuki, Kunihiko; Ohta, Nobuyoshi; and Ito, Katsunori, 4,358,050, Cl. 236-13.000.
Ito, Masaaki: *See*—
Moriyama, Shigeo; Harada, Tatsuo; and Ito, Masaaki, 4,358,198, Cl. 355-53.000.
Ito, Mitsuru. Fabric articles and the manufacture thereof. 4,357,714, Cl. 2-97.000.
Ito, Osamu; Yamasaki, Harumasa; and Nishizawa, Kazunori, to Kao Soap Co., Ltd. Disposable diaper. 4,357,938, Cl. 128-287.000.
Ito, Satoru; Watanabe, Tadashi; and Sugiura, Shinji, to Kansai Paint Co., Ltd. Metallic painting. 4,358,510, Cl. 428-463.000.
Ito, Tadashi: *See*—
Uchidoi, Masanori; and Ito, Tadashi, 4,358,188, Cl. 354-38.000.
Itoh, Isamu: *See*—
Fujita, Shinsaku; Itoh, Isamu; Ono, Shigetoshi; Harada, Tooru; and Yoshida, Yoshinobu, 4,358,526, Cl. 430-223.000.
Itoh, Kanichi; Hirayama, Yoshio; and Kodaira, Masanori, to Ebara Corporation. Composting apparatus. 4,358,540, Cl. 435-316.000.
Itoh, Kunio: *See*—
Sugino, Takashi; Wada, Masaru; Shimizu, Hirokazu; and Itoh, Kunio, 4,358,850, Cl. 372-45.000.
ITP Associates AG: *See*—
Makinen, Esa K., 4,358,026, Cl. 222-1.000.
ITT Industries, Inc.: *See*—
Bleckmann, Hans W.; and Loreck, Heinz, 4,358,164, Cl. 303-93.000.
Iverson, Roger A. Wet disc friction brake circulation system. 4,358,001, Cl. 188-71.600.
Iwahori, Hiroshi: *See*—
Iwama, Akio; Iwahori, Hiroshi; and Kazuse, Yoshitaka, 4,358,378, Cl. 210-500.200.
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Speed detector using resolver. 4,358,722, Cl. 318-661.000.
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Current type inverter. 4,358,726, Cl. 318-798.000.
Iwama, Akio; Iwahori, Hiroshi; and Kazuse, Yoshitaka, to Nitto Electric Industrial Co., Ltd. Selective permeable membranes and process for preparing the same. 4,358,378, Cl. 210-500.200.
Iwamoto, Masao: *See*—
Fujita, Takashi; and Iwamoto, Masao, 4,358,522, Cl. 430-166.000.
Iwasaki, Shoji, to Sanyo Electric Co. Ltd.; and Tottori Sanyo Electric Co., Ltd. Dot matrix display apparatus. 4,358,761, Cl. 340-792.000.
Iwasawa, Shigeru: *See*—
Narumiya, Tsuneaki; Sato, Take; and Iwasawa, Shigeru, 4,358,505, Cl. 428-332.000.
Iwata, Hidefumi, to Nissan Motor Co., Ltd. Sunroof structure. 4,358,153, Cl. 296-213.000.
J. I. Case Company: *See*—
Schlapman, William J.; and Wirsbinski, James L., 4,358,300, Cl. 55-245.000.
Shumaker, John F., 4,358,240, Cl. 414-694.000.
Thiele, Duane L., 4,358,020, Cl. 212-147.000.
J. M. Voith GmbH: *See*—
Rohde, Gunter; and Schiel, Christian, 4,357,866, Cl. 100-162.00R.
Jabsen, Felix S., to Babcock & Wilcox Company, The. Industrial technique. 4,358,421, Cl. 376-271.000.
Jackson, David M.; and Roeder, Robert J., to Kimberly-Clark Corporation. Sanitary napkin with cross directional fluid directing means. 4,357,939, Cl. 128-290.00R.
Jacobs, Martin: *See*—
Comparato, Joseph R.; and Jacobs, Martin, 4,357,883, Cl. 110-245.000.
Jacobs, Robert F.: *See*—
Hyatt, Robert K.; and Jacobs, Robert F., 4,358,672, Cl. 235-380.000.
Jacobsen, George H. Tip positioning brazing fixture. 4,358,045, Cl. 228-49.00R.
Jacono, Louis; and Mumper, Thomas O., to Hercules Incorporated. Process for preparation of aqueous solutions of water-soluble polymers. 4,358,550, Cl. 523-348.000.
Jager, Ernst H., to Messerschmitt-Bolkow-Blohm GmbH. Apparatus for destroying structures such as concrete walls. 4,357,873, Cl. 102-310.000.
Jahns, Hans O.; Heuer, Christopher E.; and Hsu, Hsiu-Hsyong, to Exxon Production Research Co. Method and apparatus for constructing buried pipeline systems. 4,358,223, Cl. 405-157.000.
Jameson, Dennis E.; and Richards, David O., to British Sidac Limited. Backwashable filter. 4,358,370, Cl. 210-415.000.
Jameson, Dennis E.; and Richards, David O., to British Sidac Limited. Backwashable filter. 4,358,371, Cl. 210-415.000.
Janecek, Jaroslav; Jiruse, Jaroslav; and Rozsypal, Josef, to Adamovske strojirny, narodni podnik. Sheet feeder device for a printing machine. 4,358,101, Cl. 271-12.000.
Janitschke, Lothar; and Hoffmann, Werner, to BASF Aktiengesellschaft. Preparation of α- and β-cyclocitral, and the N-methylaldimines of these compounds. 4,358,614, Cl. 564-248.000.
Janko, Albert B. Device for testing and rupturing amniotic membrane. 4,357,945, Cl. 128-771.000.

Janome Sewing Machine Co. Ltd.: *See*—
Hara, Kazumasa; and Koike, Mikio, 4,357,887, Cl. 112-158.00E.

Janssen Pharmaceutica, N.V.: *See*—
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,358,449, Cl. 424-248.580.

Jarrett, Robert B.; and LoCascio, James J., to Motorola, Inc. Analog to digital interface circuit. 4,358,689, Cl. 307-264.000.

Jarrett, Robert B.: *See*—
LoCascio, James J.; and Jarrett, Robert B., 4,358,812, Cl. 361-152.000.

Jarsen, Manfred H., to MCA Disco-Vision, Inc. Fluid cushion turntable for video disc player. 4,358,802, Cl. 360-99.000.

Jatkar, Arun D.: *See*—
Joshi, Ashok V.; Jatkar, Arun D.; and Sholette, William P., 4,358,515, Cl. 429-191.000.

Jautelat, Manfred; and Arlt, Dieter, to Bayer Aktiengesellschaft. 2-(2,2-Dimethyl-3-buten-1-yl)-2-oxazolines. 4,358,598, Cl. 548-216.000.

Jeanson, Rene H.; and Vagner, Daniel, to Valeo. Device for rotationally driving and steering a screw-rudder of a floating vehicle. 4,358,280, Cl. 440-61.000.

Jefferson, John R., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,358,256, Cl. 417-462.000.

Jefferson Smurfit Incorporated: *See*—
Raubenheimer, Wallace O., 4,358,047, Cl. 229-15.000.

Jeno's, Inc.: *See*—
Anstett, David N.; Volkert, Egbert W.; and Schryer, Richard F., 4,357,862, Cl. 99-355.000.

Jensen, Niels D.; and Nielsen, Kurt F., to Grundfos A/S. Gas separator for liquid-conducting systems. 4,358,299, Cl. 55-204.000.

Jerath, Vijay: *See*—
Jones, Robert D.; and Jerath, Vijay, 4,358,315, Cl. 75-123.00N.

Jinnai, Koichiro, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,358,775, Cl. 346-75.000.

Jiruse, Jaroslav: *See*—
Janecek, Jaroslav; Jiruse, Jaroslav; and Rozsypal, Josef, 4,358,101, Cl. 271-12.000.

Johannesen, Donald D.; and Williamson, Joseph R., to Bendis Corporation, The. Disc brake having a caliper supported by rollers. 4,358,003, Cl. 188-73.430.

John Wyeth & Brother Limited: *See*—
Opalko, Albert, 4,358,452, Cl. 424-256.000.
Ward, Terence J., 4,358,456, Cl. 424-267.000.

Johnson, Bruce K.; and Millard, John B., to Polaroid Corporation. Method and apparatus for controlling exposure by selective use of blocking visible filter. 4,358,186, Cl. 354-27.000.

Johnson, Colin C., to British Aerospace Public Limited Company. Non-return valves. 4,357,958, Cl. 137-846.000.

Johnson, Edward, to Kero-Sun, Inc. Space heating apparatus. 4,357,929, Cl. 126-96.000.

Johnson, Eugene R.; and Haran, Jack P., to Bliss & Laughlin Industries, Inc. Tape applicator. 4,358,337, Cl. 156-526.000.

Johnson & Johnson: *See*—
McConnell, Wesley J., 4,357,827, Cl. 73-73.000.

Johnson, Ronald S.; and Hasty, Stephen E., to International Telephone and Telegraph Corporation. Cartridge-type electric immersion heating element having an integrally contained thermostat. 4,358,667, Cl. 219-331.000.

Johnston, Linda G.: *See*—
Bailey, Joseph; Clarke, David; and Johnston, Linda G., 4,358,527, Cl. 430-223.000.

Johnston, Merrill F.; Shumka, Alex; Miller, Emmett; and Evans, Kenneth C., to California Institute of Technology. Synchronized voltage contrast display analysis system. 4,358,732, Cl. 324-73.00R.

Jones, Charles D.; and Goettel, Mary E., to Eli Lilly and Company. Process for preparing 3-(4-aminoethoxybenzoyl)benzo[b]thiophenes. 4,358,593, Cl. 546-202.000.

Jones, Dennis P.; and Pipkin, David J., to International Business Machines Corporation. Coating apparatus. 4,357,899, Cl. 118-665.000.

Jones, Hugh L.: *See*—
Kukucka, William P.; Hynes, Frank R.; Jones, Hugh L.; and Thompson, David M., 4,358,197, Cl. 355-14.00R.

Jones, Richard A., to General Motors Corporation. Nickel-zinc cell. 4,358,517, Cl. 429-206.000.

Jones, Robert D.; and Jerath, Vijay, to University College Cardiff. Manganese steels. 4,358,315, Cl. 75-123.00N.

Jones, Thomas H.: *See*—
MacDonald, Daniel J.; and Jones, Thomas H., 4,358,695, Cl. 310-105.000.

Jones, Winton D.; Kane, John M.; and Miller, Francis P., to Merrell Dow Pharmaceuticals Inc. Tetrahydro-7a-(optionally substituted phenyl)-1H-pyrrolo[1,2-b][1,2,4]-triazole-2(3H)-thiones. 4,358,457, Cl. 424-269.000.

Jonsson, Gunnar, to Nolic I Borlange AB. Pipe coupling device. 4,358,140, Cl. 285-419.000.

Joppien, Hartmut: *See*—
Kruger, Hans R.; and Joppien, Hartmut, 4,358,408, Cl. 260-453.300.

Joseph, Charles A.: *See*—
Ameen, Joseph G.; Joseph, Charles A.; Rivenburgh, Dennis L.; and Sissenstein, David W., 4,358,627, Cl. 570-238.000.

Joshi, Ashok V.; Jatkar, Arun D.; and Sholette, William P., to Ray-O-Vac Corporation. Phosphorus-containing solid state electrolyte. 4,358,515, Cl. 429-191.000.

Joyner, Philip G., to Dowty Hydraulic Units Limited. Rotary intermeshing gear machine with pressure-balancing including resilient and non-extrudable sealing members. 4,358,260, Cl. 418-132.000.

Jubelt, Warren L., to General Motors Corporation. End finishing composite trim strips. 4,358,482, Cl. 427-259.000.

Jubenville, Duncan B., to Rock Oil Corporation. Continuous apparatus for separating hydrocarbon from earth particles and sand. 4,358,373, Cl. 210-181.000.

Jugan, Michael R.: *See*—
Nottingham, Lawrence D.; and Jugan, Michael R., 4,358,700, Cl. 310-262.000.

Julius, Volker; and Lienenluke, Paul, to Vorwerk & Co. Interholding GmbH. Holding device for supporting a turntable shaft. 4,358,165, Cl. 308-22.000.

Jung, Werner: *See*—
Hohn, Richard; Jung, Werner; and Winter, Gerhard, 4,358,779, Cl. 346-135.100.

Kaarup, Darrell R. Fluid heater apparatus. 4,358,652, Cl. 219-10.55A.

Kabushika Kaisha Ohara Kogaku Garasu Seizosho: *See*—
Nozawa, Nobuhiro, 4,358,543, Cl. 501-40.000.

Kabushiki Kaisha Copal: *See*—
Ishiguro, Yasuo, 4,358,191, Cl. 354-271.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Horikoshi, Ichiro; Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; and Fujita, Susumu, 4,358,642, Cl. 179-115.50R.
Ono, Kenichi; Otawa, Shuji; and Shida, Masaharu, 4,358,840, Cl. 368-251.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Ezawa, Sadaaki; and Saito, Tsutomu, 4,357,849, Cl. 84-1.010.

Kabushiki Kaisha Suwa Seikosha: *See*—
Mitsui, Yoshihiro, 4,358,776, Cl. 346-76.0PH.
Yamazaki, Suguru; and Saito, Tadamori, 4,358,837, Cl. 368-69.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Fukuta, Masakazu, 4,358,023, Cl. 220-209.000.

Kabushiki Kaisha Yaskawa Denki Seisakusho: *See*—
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,358,722, Cl. 318-661.000.
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,358,726, Cl. 318-798.000.

Kaderabek, Milos. Electric soldering iron with vibratory soldering bit. 4,358,661, Cl. 219-230.000.

Kaduk, Bruce A.: *See*—
Fox, Daniel W.; Kaduk, Bruce A.; and Starr, John B., Jr., 4,358,568, Cl. 525-439.000.

Kagoshima, Takashi. Fluid heater with spiral hot gas flow. 4,357,909, Cl. 122-183.000.

Kahn, Leonard R. Signal presence determination method for use in a contaminated medium. 4,358,738, Cl. 328-165.000.

Kai, Tohru: *See*—
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,358,722, Cl. 318-661.000.
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,358,726, Cl. 318-798.000.

Kallin, Ingmar N., to Chore-Time Equipment, Inc. Thrust bearing. 4,358,168, Cl. 308-135.000.

Kalu, Georgina; and Markus, Michael, to ICI Australia Limited. Four component amide copolymer. 4,358,355, Cl. 204-159.160.

Kamber, Bruno: *See*—
Sieber, Peter; Kamber, Bruno; and Rink, Hans, 4,358,439, Cl. 424-177.000.

Kamiya, Kenji: *See*—
Tohyama, Nobuo; Yoshida, Junichi; Yamano, Shozo; and Kamiya, Kenji, 4,358,836, Cl. 368-47.000.

Kanda, Masao; and Yoshida, Makoto, to Fuji Photo Film Co., Ltd. Method of producing pressure-sensitive copying sheets. 4,358,067, Cl. 242-75.510.

Kane, John M.: *See*—
Jones, Winton D.; Kane, John M.; and Miller, Francis P., 4,358,457, Cl. 424-269.000.

Kaneko, Katsumi: *See*—
Okumura, Yoshiharu; Sakakibara, Tadamori; and Kaneko, Katsumi, 4,358,626, Cl. 568-899.000.
Sakakibara, Tadamori; Matsushima, Yoshihisa; and Kaneko, Katsumi, 4,358,621, Cl. 568-454.000.

Kansai Paint Co., Ltd.: *See*—
Ito, Satoru; Watanabe, Tadashi; and Sugiura, Shinji, 4,358,510, Cl. 428-463.000.

Kao Soap Co., Ltd.: *See*—
Ito, Osamu; Yamasaki, Harumasa; and Nishizawa, Kazunori, 4,357,938, Cl. 128-287.000.

Kapfinger, Josef: *See*—
Konig-Lumer, Inge; Schwenk, Ulrich; Salvador, Rene; and Kapfinger, Josef, 4,358,389, Cl. 252-70.000.

Kappelsberger, Erwin: *See*—
Steigerwald, Karl-Heinz; Anderl, Peter; Kappelsberger, Erwin; Monch, Clauspeter; Konig, Dieter; and Scheffels, Wilheim, 4,358,657, Cl. 219-121.0EN.

Kappenhagen, George A., to Westinghouse Electric Corp. Hydraulic system including oil replenishment for multi-stage hydraulic jack. 4,357,995, Cl. 187-17.000.

Kapur, Jagdish C.: *See*—
Henniger, Peter W.; van der Drift, Johannes K.; van Veen, Gerard J.; and Kapur, Jagdish C., 4,358,588, Cl. 544-030.000.

Karelov, Jury I.: *See*—
Feldshtein, Isaak Y.; Filipanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Bobyarsky, Alexandr A.; and Pashkov, Alexandr N., 4,357,967, Cl. 140-92.100.

Karpisek, Ladislav S. Pallet cage hinge. 4,357,736, Cl. 16-263.000.

Katayama, Shitomi: *See—*
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akiro; Katayama, Shitomi; and Nomura, Suguru, 4,358,507, Cl. 428-429.000.

Kato, Shigehiro: *See—*
Koike, Hiroyuki; and Kato, Shigehiro, 4,358,103, Cl. 271-248.000.

Katsube, Junki: *See—*
Sunagawa, Makoto; Sato, Hiromi; Katsube, Junki; and Yamamoto, Hisao, 4,358,620, Cl. 568-439.000.

Kaufman, Marvin L.; and Salathe, George F., to Mobil Oil Corporation. Chemically modified imidazole curing catalysts for epoxy resin and powder coatings containing them. 4,358,571, Cl. 525-524.000.

Kaufman, Paul R.: *See—*
Sass, Allan; McCarthy, Harry E.; Kaufman, Paul R.; and Finney, Clement S., 4,358,344, Cl. 201-4.000.

Kaun, Thomas D., to United States of America, Energy. Electrochemical cell and negative electrode therefor. 4,358,513, Cl. 429-103.000.

Kawabata, Norio: *See—*
Tanaka, Eiichi; Furumai, Koro; Indo, Masahiro; and Kawabata, Norio, 4,358,265, Cl. 431-76.000.

Kawai, Hisasi: *See—*
Igashira, Toshihiko; Kawai, Hisasi; and Nomura, Ken, 4,357,927, Cl. 123-622.000.
Kohama, Tokio; Kawai, Hisasi; Obayashi, Hideki; and Egami, Tsuneyuki, 4,357,830, Cl. 73-204.000.

Kawamoto, Tadashi: *See—*
Iida, Kiichi; Kawamoto, Tadashi; and Miyoshi, Kazuhito, 4,358,354, Cl. 204-159.150.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Nishikawa, Yoshiyasu; Harada, Chosei; and Nakano, Masao, 4,358,244, Cl. 416-186.00R.

Kawasaki Steel Corporation: *See—*
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Suzuki, Munetoshi; Yamamoto, Hiromasa; and Sakamoto, Gunji, 4,358,093, Cl. 266-103.000.

Kayama, Nagaoki, to Hokushin Electric Works, Ltd. Electromagnetic flowmeter in shielded lines. 4,357,835, Cl. 73-861.170.

Kazuo, Tsuzura: *See—*
Naomi, Yamaguchi; Kohji, Noguchi; and Kazuo, Tsuzura, 4,358,546, Cl. 521-32.000.

Kazuse, Yoshitaka: *See—*
Iwama, Akio; Iwahori, Hiroshi; and Kazuse, Yoshitaka, 4,358,378, Cl. 210-500.200.

Kazuyoshi, Honda: *See—*
Masami, Takagi; Shunichi, Nakayama; and Kazuyoshi, Honda, 4,358,349, Cl. 204-15.000.

Kebles, Diane B.: *See—*
Graham, Henry A., Jr.; Olekna, David J.; Hawk, Johnna B.; and Kebles, Diane B., 4,358,436, Cl. 424-11.000.

Keferl, Gregory T.: *See—*
Winburn, Charles F.; Craft, William K.; Keferl, Gregory T.; Scheele, Wilfred; and Baker, Juanita, 4,357,741, Cl. 27-19.000.

Keiper U.S.A., Inc.: *See—*
Osterhold, Wolfgang; and Klueting, Bernd A., 4,358,155, Cl. 297-379.000.

Keller Products, Inc.: *See—*
Keller, Robert R.; Steinberg, Richard; and Whittemore, John P., 4,357,978, Cl. 160-41.000.

Keller, Robert R.; Steinberg, Richard; and Whittemore, John P., to Keller Products, Inc. Roller shade seal system. 4,357,978, Cl. 160-41.000.

Kemmer, Klaus H. Multiple-blade system as a turning tool for the cutting machining of workpieces. 4,357,847, Cl. 82-36.00R.

Kemp, David M., Jr.: *See—*
Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., Jr., 4,358,296, Cl. 55-38.000.

Kent, William C., to Western Electric Company, Inc. Apparatus for ascertaining internal dimensions of a hollow article. 4,357,754, Cl. 33-148.00H.

Kerfoot, Francis A.: *See—*
Lyon, Robert C.; Booton, Alan J.; and Kerfoot, Francis A., 4,357,818, Cl. 72-177.000.

Kerko, David J.: *See—*
Hares, George B.; Kerko, David J.; and Morse, David L., 4,358,542, Cl. 501-13.000.

Kern, James W.; and Tetreault, Tommy M., to Union Carbide Corporation. Method for forming a porous aluminum layer. 4,358,485, Cl. 427-376.800.

Kero-Sun, Inc.: *See—*
Johnson, Edward, 4,357,929, Cl. 126-96.000.

Keske, Robert G.; and Stephens, James R., to Standard Oil Company (Indiana). Injection moldable amide-imide copolymers. 4,358,561, Cl. 524-600.000.

Keuper, John J.: *See—*
Liu, Joseph C.; Wagner, Paul D.; and Keuper, John J., 4,358,696, Cl. 310-156.000.
Liu, Joseph C.; Wagner, Paul D.; and Keuper, John J., 4,358,697, Cl. 310-156.000.

Keyes, Robert W., to International Business Machines Corporation. Semiconductor surface acoustic wave device. 4,358,745, Cl. 333-155.000.

Kido, Koichiro: *See—*
Tanaka, Hiroyuki; Aosai, Fumito; Kido, Koichiro; and Yamamoto, Shogo, 4,358,508, Cl. 428-458.000.

Kieffer, Vernon E., to Emerson Electric Co. Method and apparatus for forming multi-pole windings. 4,357,968, Cl. 140-92.100.

Kiekert GmbH & Co. Kommanditgesellschaft: *See—*
Kleefeldt, Frank; and Brackmann, Horst, 4,357,815, Cl. 70-337.000.

Kiemle, Peter: *See—*
Brunn, Horst; Kiemle, Peter; Hund, Franz; and Bade, Heribert, 4,358,431, Cl. 423-632.000.

Kihira, Masafumi: *See—*
Hamane, Tokuhito; Kinoshita, Toshio; and Kihira, Masafumi, 4,358,099, Cl. 269-93.000.

Kikuchi, Yoichi: *See—*
Takegawa, Tetuo; Kikuchi, Yoichi; and Mizusawa, Akira, 4,358,234, Cl. 411-57.000.

Kim, Chi S., to Avco Corporation. Method of producing acetylene from coal. 4,358,629, Cl. 585-538.000.

Kimberly-Clark Corporation: *See—*
Jackson, David M.; and Roeder, Robert J., 4,357,939, Cl. 128-290.00R.
Nuttall, David A., 4,358,342, Cl. 162-259.000.

Kimura, Atsushi, to Hokushin Electric Works, Ltd. Displacement converter. 4,357,834, Cl. 73-708.000.

Kimura, Shuichi, to Sony Corporation. Record player. 4,358,842, Cl. 369-233.000.

King-Seeley Thermos Co.: *See—*
Olson, John T.; and Westergaard, Robert K., 4,357,808, Cl. 62-347.000.

Kinoshita, Shigeji, to Mitsubishi Denki Kabushiki Kaisha. Plasma reaction device. 4,358,686, Cl. 250-492.200.

Kinoshita, Toshio: *See—*
Hamane, Tokuhito; Kinoshita, Toshio; and Kihira, Masafumi, 4,358,099, Cl. 269-93.000.

Kirk, Johnny. Canoe seat construction. 4,357,894, Cl. 114-347.000.

Kirschner, Francis, to Soundcoat Company, Inc., The. Damped railway wheel. 4,358,148, Cl. 295-7.000.

Kissell, Fred N.; Muldoon, Terry L.; Schroeder, William E., Jr.; and Peterson, Carl R., to United States of America, Interior. Air diversion and dust control system for longwall shearers. 4,358,160, Cl. 299-43.000.

Kissick, Russell P. Support system for a wheeled vehicle. 4,358,127, Cl. 280-303.000.

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Fujino, Masahiko; Wakimasu, Mitsuhiro; and Kitada, Chieko, 4,358,440, Cl. 424-177.000.

Kitazume, Keisuke: *See—*
Akimoto, Saburo; Maruchi, Sachio; Fukaya, Masahiro; Shibano, Tomishi; Chimura, Ippei; Asakura, Hiroshi; Kitazume, Keisuke; and Fuse, Shiro, 4,358,494, Cl. 428-40.000.

Klawitter, Jerome J., to Hemex Incorporated. Heart valve prosthesis. 4,357,715, Cl. 3-1.500.

Kleefeldt, Frank; and Brackmann, Horst, to Kiekert GmbH & Co. Kommanditgesellschaft. Locks for vehicular antitheft lock system. 4,357,815, Cl. 70-337.000.

Kleemann, Axel; Nygren, Robert; and Wagner, Rudolf, to Degussa Aktiengesellschaft. Process for the production of 1-amino-propanediol-(2,3) (II). 4,358,615, Cl. 564-475.000.

Kleemann, Axel: *See—*
Schwarze, Werner; and Kleemann, Axel, 4,358,459, Cl. 424-283.000.

Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., to International Flavors & Fragrances Inc. Carboamidoalkyl norbornanes, organoleptic uses thereof and process for preparing same. 4,357,949, Cl. 131-276.000.

Kline, Morris: *See—*
Halpern, Ernst; Kline, Morris; Guslawski, Waldemar; and Kukke, Gopal S., 4,357,993, Cl. 187-1.00R.

Klingberg, Anders W.: *See—*
Hellsten, Karl M. E.; and Klingberg, Anders W., 4,358,368, Cl. 209-167.000.

Klockner-Humboldt-Deutz AG: *See—*
Kryczun, Alfred, 4,358,119, Cl. 277-3.000.
Megerle, Friedrich; and Cordewener, Heinz, 4,358,094, Cl. 266-190.000.
Weigel, Horst; and Melcher, Gerhard, 4,358,311, Cl. 75-26.000.

Klosek, Joseph; and Tao, John C., to Air Products and Chemicals, Inc. Process for enhanced benzene-synthetic natural gas production from gas condensate. 4,358,364, Cl. 208-92.000.

Klueting, Bernd A.: *See—*
Osterhold, Wolfgang; and Klueting, Bernd A., 4,358,155, Cl. 297-379.000.

Knaak, David. Animal trap lifting apparatus. 4,357,776, Cl. 43-96.000.

Knebel, Francis P.: *See—*
Branigin, Michael H.; Knebel, Francis P.; and McClellan, Gerald V., 4,358,829, Cl. 364-900.000.

Knecht, Helmut, to Teledyne Adams. Tubular valve device and method of assembly. 4,357,952, Cl. 137-15.000.

Knoll International, Inc.: *See—*
Zelkowitz, Hyman L., 4,357,723, Cl. 5-403.000.

Knuth, Manfred; and Homann, Thorsten, to Fried. Krupp Gesellschaft mit Beschrankter Haftung. Apparatus for the recovery of oil from oil-bearing vegetable matter. 4,357,865, Cl. 100-117.000.

Kobayashi, Hidehiko: *See—*
Takasuka, Kaoru; Arakawa, Tatsumi; Matushita, Fumio; and Kobayashi, Hidehiko, 4,358,782, Cl. 357-2.000.

Kobayashi, Tsutomu: *See—*
Oeffinger, Thomas R.; Bailey, Robert F.; Kobayashi, Tsutomu; and Reekstin, John P., 4,358,339, Cl. 156-643.000.

Kobayashi, Yoshiro: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,358,406, Cl. 260-239.55R.

Kobler, Ingo; and Burger, Rainer, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Separable ink supply trough for rotary printing press. 4,357,871, Cl. 101-350.000.

Koch, Kay F.: *See*—
Nash, Stephen M.; Koch, Kay F.; and Hoehn, Marvin M., 4,358,584, Cl. 536-7.100.

Kodaira, Masanori: *See*—
Itoh, Kanichi; Hirayama, Yoshio; and Kodaira, Masanori, 4,358,540, Cl. 435-316.000.

Koff, Fred W.: *See*—
Sifniades, Stylianos; Tunick, Allen A.; and Koff, Fred W., 4,358,618, Cl. 568-385.000.

Kogawa, Kouichi: *See*—
Senoo, Tetsuo; and Kogawa, Kouichi, 4,358,713, Cl. 315-291.000.

Kohama, Tokio; Kawai, Hisasi; Obayashi, Hideki; and Egami, Tsuneyuki, to Nippon Soken, Inc. Gas flow measuring apparatus. 4,357,830, Cl. 73-204.000.

Kohji, Noguchi: *See*—
Naomi, Yamaguchi; Kohji, Noguchi; and Kazuo, Tsuzura, 4,358,546, Cl. 521-32.000.

Kohler, Lothar, to Ruti Machinery Works Ltd. Threaded light metal gripper with reinforcement rib. 4,357,964, Cl. 139-448.000.

Kohlmann, Wilhelm: *See*—
Scharwachter, Peter; Gutsche, Klaus; Kohlmann, Wilhelm; Hartleben, York; and Heberle, Wolfgang, 4,358,458, Cl. 424-273.00R.

Kohn, Gustave K., to Zoecon Corporation. 1-Phenyl-3-polyhaloalkyl(-vinyl)sulfenyl uracils. 4,358,591, Cl. 544-311.000.

Koike, Hiroyuki; and Kato, Shigehiro, to Canon Kabushiki Kaisha. Magnetic card transporting apparatus. 4,358,103, Cl. 271-248.000.

Koike, Kazuyoshi: *See*—
Tahara, Yasuteru; and Koike, Kazuyoshi, 4,357,826, Cl. 73-37.700.

Koike, Mikio: *See*—
Hara, Kazumasa; and Koike, Mikio, 4,357,887, Cl. 112-158.00E.

Kokesh, Fritz C., to Phillips Petroleum Company. Sample injection system for chemical analyzer and method of sample analysis. 4,357,836, Cl. 73-863.110.

Kokkonen, Kim: *See*—
Folmsbee, Alan C.; Kokkonen, Kim; and Spaw, William J., 4,358,833, Cl. 365-200.000.

Koletar, Gabor I.; Frost, Jonathan R.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, to Synthelabo. Pyrimido- and imidazo-pyridoindole derivatives. 4,358,451, Cl. 424-251.000.

Kollmann, Georg: *See*—
Finkelmann, Heino; Rehage, Gunther; and Kollmann, Georg, 4,358,391, Cl. 252-299.010.

Kolonko, Richard P., Jr.: *See*—
Mettetal, Bonnie K.; and Kolonko, Richard P., Jr., 4,358,347, Cl. 203-38.000.

Kondo, Isao; and Nakajima, Yukio, to Olympus Optical Co., Ltd. Automatic-light control electronic flash device for use in automatic exposure camera. 4,358,187, Cl. 354-33.000.

Kondo, Nobuo: *See*—
Naganoma, Masanori; Kondo, Nobuo; Senda, Eiichi; Hibi, Hitoshi; Suzuki, Kunihiko; Ohta, Nobuyoshi; and Ito, Katsunori, 4,358,050, Cl. 236-13.000.

Kondo, Shinichi: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; Kondo, Shinichi; and Is....uka, Masaaki, 4,358,602, Cl. 549-328.000.

Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive composition with 5-nitrofurfural derivative sensitizer. 4,358,521, Cl. 430-83.000.

Konig, Dieter: *See*—
Steigerwald, Karl-Heinz; Anderl, Peter; Kappelsberger, Erwin; Monch, Claupeter; Konig, Dieter; and Scheffels, Wilheim, 4,358,657, Cl. 219-121.0EN.

Konig-Lumer, Inge; Schwenk, Ulrich; Salvador, Rene; and Kapfinger, Josef, to Hoechst Aktiengesellschaft. Agent for de-icing and protecting against icing-up. 4,358,389, Cl. 252-70.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Hoshizaki, Tatsuji; and Seto, Yutaka, 4,358,102, Cl. 271-164.000.
Ishiguro, Yasuo, 4,358,191, Cl. 354-271.000.
Tokitou, Kouji; and Wada, Tsuneo, 4,358,533, Cl. 430-512.000.

Konno, Kazushi: *See*—
Akimoto, Mamoru; Konno, Kazushi; and Hagyu, Toshimasa, 4,357,751, Cl. 29-879.000.

Kono, Takuo: *See*—
Yoshii, Masataka; Anabuki, Mitsugu; Kuwabara, Tatsuro; Obana, Yasuo; and Kono, Takuo, 4,358,313, Cl. 75-60.000.

Koshimaru, Shigeru: *See*—
Kurakami, Osamu; Koshimaru, Shigeru; and Yamanaka, Takashi, 4,357,747, Cl. 29-571.000.

Koslosky, Howard E.; and Reetz, Tustin C., to Eaton Corporation. Panelboard for bolt-in and plug-in circuit breakers. 4,358,815, Cl. 361-355.000.

Kosuge, Yasuo; Yakabe, Masamori; Oga, Tadanori; and Maeda, Toru, to Nippon Steel Corporation. Method and apparatus for gathering a ring shaped wire rod. 4,357,965, Cl. 140-2.000.

Koubek, Michael: *See*—
Pfleiderer, Hans-Joerg; Stein, Karl-Ulrich; Koubek, Michael; and Christiansen, Hans-Martin, 4,358,786, Cl. 358-310.000.

Koyama, Koichi; and Fujita, Shinsaku, to Fuji Photo Film Co., Ltd. Photographic element. 4,358,532, Cl. 430-505.000.

Kratky, Frank, to Westguard Products, Inc. Animal restraint. 4,357,906, Cl. 119-98.000.

Kratos Limited: *See*—
Read, Frank H., 4,358,680, Cl. 250-305.000.

Kraus, Bernd; and Glockler, Otto, to Robert Bosch GmbH. Apparatus for temperature control of a resistor used for measurement purposes, especially in internal combustion engines. 4,357,829, Cl. 73-204.000.

Krehbiel, V. Dwight, to Kreonite Inc. Transport for developing film in a photographic film processor. 4,358,194, Cl. 354-320.000.

Krejmas, John S., to Rogers, Lunt & Bowlen Company. Machine safety guard. 4,357,839, Cl. 74-615.000.

Kremer, Hubert; and Claassen, Josef, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Punch for pattern card. 4,358,038, Cl. 226-53.000.

Kreonite Inc.: *See*—
Krehbiel, V. Dwight, 4,358,194, Cl. 354-320.000.

Krieger, Jeanne K.: *See*—
O'Brien, Robert E.; and Krieger, Jeanne K., 4,358,401, Cl. 252-628.000.

Kripner, George C. Aircraft petcock lock. 4,357,814, Cl. 70-232.000.

Kronseder, Hermann. Electric heating device for heating the flow of glue to a labeling machine. 4,358,664, Cl. 219-299.000.

Kruger, Hans R.; and Joppien, Hartmut, to Schering AG. Propane-1,2-dionedioximes, pesticides containing these compounds, and the method for their preparation. 4,358,408, Cl. 260-453.300.

Kruger, Hans-Rudolf, to Schering AG. Process for the preparation of 1,2,3-thiadiazol-5-yl ureas. 4,358,596, Cl. 548-127.000.

Krupp-Koppers GmbH: *See*—
Lorrek, Johannes, 4,358,345, Cl. 202-228.000.

Kryczun, Alfred, to Klockner-Humboldt-Deutz AG. Apparatus for gas-tight sealing of connection points of rotationally mounted machine parts. 4,358,119, Cl. 277-3.000.

Krzak, David W., to McCormick-Morgan, Inc. Telescoping conduit for pressurized air. 4,357,860, Cl. 98-33.00R.

Kudo, Osamu: *See*—
Tamada, Haruo; and Kudo, Osamu, 4,358,752, Cl. 340-347.0AD.

Kuehler, Christopher W.: *See*—
Rosenthal, Joel W.; Dahlberg, Arthur J.; and Kuehler, Christopher W., 4,358,359, Cl. 208-8.0LE.

Kuehnle, Manfred R.; Orme, Gordon; and Brophy, Joseph L., to Coulter Systems Corporation. Electrophotographic color proofing apparatus. 4,358,195, Cl. 355-4.000.

Kuhlmann, George E.; and Holzhauer, Juergen K., to Standard Oil Company (Indiana). Process for the manufacture of maleic anhydride having improved age molten color. 4,358,600, Cl. 549-262.000.

Kuhlmann, Josef H. Conveyor for the removal of droppings for battery-designed poultry cage installations. 4,357,904, Cl. 119-22.000.

Kuipers, John H., to Agri Environment Systems, Inc. Poultry manure panel and method of making same. 4,358,496, Cl. 428-72.000.

Kukke, Gopal S.: *See*—
Halpern, Ernst; Kline, Morris; Guslawski, Waldemar; and Kukke, Gopal S., 4,357,993, Cl. 187-1.00R.

Kukucka, William P.; Hynes, Frank R.; Jones, Hugh L.; and Thompson, David M., to Xerox Corporation. Very high speed duplicator with limitless finishing function. 4,358,197, Cl. 355-14.00R.

Kulik, Donald A. Dihedral aerodynamic structure. 4,357,777, Cl. 46-80.000.

Kumpa, Vladimir: *See*—
House, Lawrence A.; Kumpa, Vladimir; and Magnuson, John E., 4,358,088, Cl. 254-349.000.

Kumpar, Zvonimir Z., to SKF Industrial Trading & Development Co. B.V. Universal joint. 4,357,810, Cl. 464-8.000.

Kumpar, Zvonimir Z., to SKF Industrial Trading & Development Co. B.V. Universal joint. 4,358,283, Cl. 464-143.000.

Kunz, Peter, to Degussa AG. Strongly acid gold alloy bath. 4,358,350, Cl. 204-43.00G.

Kupersmit, Julius B. Collapsible shipping container having reinforced base element. 4,358,048, Cl. 229-23.0BT.

Kupersmit, Julius B. Collapsible shipping container with reinforcing insert. 4,358,049, Cl. 229-41.00R.

Kurakami, Naoki; Takahashi, Tetsuya; and Suzuki, Etsuo, to Nippon Electric Co., Ltd. Facsimile and similar apparatus employing a plurality of solid-state image scanners. 4,358,794, Cl. 358-293.000.

Kurakami, Osamu; Koshimaru, Shigeru; and Yamanaka, Takashi, to Nippon Electric Co., Ltd. Method for producing a semiconductor device having an insulated gate type field effect transistor. 4,357,747, Cl. 29-571.000.

Kurosaki Refractories, Co., Ltd.: *See*—
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Fukuda, Kazushige, 4,358,576, Cl. 528-30.000.

Kuschel, Frank: *See*—
Schubert, Herrmann; Demus, Dietrich; Zaschke, Horst; Kuschel, Frank; Pelzl, Gerhard; Nothnikz, Hans-Ulrich; and Schliemann, Willibald, 4,358,589, Cl. 544-179.000.

Kuwabara, Tatsuro: *See*—
Yoshii, Masataka; Anabuki, Mitsugu; Kuwabara, Tatsuro; Obana, Yasuo; and Kono, Takuo, 4,358,313, Cl. 75-60.000.

Kuwakado, Satosi: *See*—
Tsuge, Noboru; Kuwakado, Satosi; Tanaka, Katsuyuki; and Shimogawa, Toshiaki, 4,358,135, Cl. 280-806.000.
Tsuge, Noboru; Kuwakado, Satosi; Shimogawa, Toshiaki; and Takei, Toshihiro, 4,358,136, Cl. 280-806.000.

Kwiatek, Jack; and Brima, Thomas S., to National Distillers & Chemical Corp. Process for preparing 2-butenolide. 4,358,601, Cl. 549-295.000.

Kyo, Suizo: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akiro; Katayama, Shitomi; and Nomura, Suguru, 4,358,507, Cl. 428-429.000.

Kytta, Oswald O., to Bendix Corporation, The. Stud for brake booster. 4,357,746, Cl. 29-509.000.

Kyu, Shikun; and Hepworth, Edward C., to Motorola, Inc. Control circuitry for data transfer in an advanced data link controller. 4,358,825, Cl. 364-200.000.

Labelle, Henri M. R. Panic bar assembly. 4,357,981, Cl. 160-183.000.

Laboratorio Guidotti & C. S.p.A.: *See*—
Murmann, Walter; and Ponchiroli, Osvaldo, 4,358,441, Cl. 424-180.000.

Laforest, Guy. Pneumatic core for adjustable firmness of mattresses, cushions and the like. 4,357,724, Cl. 5-449.000.

Laidlaw Drew & Co. Ltd.: *See*—
Pont, Richard S.; and Gray, John, 4,358,266, Cl. 431-90.000.

Lambe, John J.; McCarthy, Shaun L.; and Stadler, Henry L., to Ford Motor Company. Light modulator. 4,358,743, Cl. 332-7.510.

Lampe, Warren R.; Mitchell, Tyrone D.; and Cella, James A., to General Electric Company Silicone Products Business Division. Self-bonding one-component RTV silicone rubber compositions. 4,358,575, Cl. 528-17.000.

Lampinen, Markku, to Valmet Oy. Method and apparatus for drying objects. 4,357,758, Cl. 34-9.000.

Landau, Richard E. Methods for forming supported cavities by surface cooling. 4,358,222, Cl. 405-130.000.

Lane, L. Thomas: *See*—
Morris, Richard D.; and Lane, L. Thomas, 4,358,233, Cl. 410-127.000.

Lanfranconi, Attilio, to Societa Cavi Pirelli S.p.A. Above-ground conductor unit with corona noise reducing covering comprising a conductive material and a hydrophilic material. 4,358,637, Cl. 174-127.000.

Lange, Benjamin O.; and Scheit, Arnold, to Messerschmitt-Bolkow-Blohm GmbH. Method of sun and earth acquisition for three axis stabilized satellites equipped with acquisition sensors. 4,358,076, Cl. 244-164.000.

Lange, Frederick F., to Rockwell International Corporation. Sodium ion conductor, solid electrolyte strengthened with zirconia. 4,358,516, Cl. 429-193.000.

Lardenois, Patrick: *See*—
Koletar, Gabor I.; Frost, Jonathan R.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,358,451, Cl. 424-251.000.

Latone, Thomas L.: *See*—
Saint, David; Eldon, James, III; and Latone, Thomas L., 4,357,735, Cl. 16-224.000.

Laughlin, James L.; and Hansen, Richard F., to Laughlin, James L. Ski pole with foot rest and ski lift chair engaging means. 4,358,138, Cl. 280-819.000.

Lavie, Louis F. Process of manufacture of sugar caramel in powdered form. 4,358,469, Cl. 426-250.000.

Lawrence, Brian R., to Xerox Corporation. Wire stitchers. 4,358,042, Cl. 227-152.000.

Lawrence, William R., to Hersey Products, Inc. Fiber optic transducer and method. 4,358,678, Cl. 250-227.000.

Leahy, David J., to Dennison Manufacturing Company. Picture frame with rotatable easel. 4,357,769, Cl. 40-152.100.

Lecouras, George T.: *See*—
Downey, Daniel F.; and Lecouras, George T., 4,358,338, Cl. 156-627.000.

Ledis, Stephen L.: *See*—
Crews, Harold R.; Chastain, David L., Jr.; and Ledis, Stephen L., 4,358,394, Cl. 252-408.000.

Lee, Benjamin Y. S.: *See*—
Reed, Russell, Jr.; Lee, Benjamin Y. S.; and Henry, Ronald A., 4,358,327, Cl. 149-19.400.

Lee, Shih-Ying; and Briefer, Dennis K., to Setra Systems, Inc. Capacitive pressure sensor. 4,358,814, Cl. 361-283.000.

Lee, Shy-Fuh; and Henrick, Clive A., to Zoecon Corporation. Esters of phenalkyloxycarbonylamino acids. 4,358,606, Cl. 560-163.000.

Lee, Tzuo-Chang: *See*—
Chang, Kuo H.; Lee, Tzuo-Chang; and Lin, Jacob W., 4,358,519, Cl. 430-2.000.

Leggett, Hyman, to Hughes Aircraft Company. Ceramic broadband radome. 4,358,772, Cl. 343-872.000.

Leggett & Platt, Incorporated: *See*—
Zapletal, Henry; and Wells, Thomas J., 4,358,097, Cl. 267-101.000.

Lehigh University: *See*—
Susskind, Alfred K., 4,358,847, Cl. 371-25.000.

Leibhard, Erich; and Popp, Franz, to Hilti Aktiengesellschaft. Device for the melting and measured discharge of thermoplastic adhesive. 4,358,030, Cl. 222-146.00H.

Leigh Products, Inc.: *See*—
Strauss, Leopold, 4,357,731, Cl. 16-70.000.

Leinenbach, Dieter J. Hot-water central heating system. 4,358,052, Cl. 237-8.00R.

Lemercier, Pierre; Marchal, Paul; Moreau, Jean-Pierre; Vertut, Jean; and Ligozat, Henri, to Commissariat a l'Energie Atomique. Submarine vehicle for dredging and raising minerals resting on the sea bed at great depths. 4,357,764, Cl. 37-54.000.

Leonov, Boris N.: *See*—
Antonov, Evgeny A.; Matveev, Anatoly S.; Nikonov, Nikolai I.; Leonov, Boris N.; Razhev, Anatoly V.; and Prokofiev, Vyacheslav I., 4,357,816, Cl. 72-57.000.

Lermann, Peter: *See*—
Stemme, Otto; Staudacher, Frank; Lermann, Peter; Wagensonner, Eduard; and Schultheiss, Karl-Heinz, 4,358,805, Cl. 360-106.000.

Leswin, Willem J., to U.S. Philips Corporation. Device for epitaxially providing a layer of semiconductor material. 4,357,897, Cl. 118-412.000.

Leuchtmann, Guenter: *See*—
Schmid, Hans; Becker, Klaus; Leuchtmann, Guenter; and Schoettle, Klaus, 4,358,069, Cl. 242-192.000.

Levine, Stephen A.: *See*—
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,385, Cl. 252-32.70E.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,386, Cl. 252-32.70E.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,387, Cl. 252-33.400.

Levy, Allan, to Siemens Corporation. Two to four wire hybrid circuit. 4,358,643, Cl. 179-170.0NC.

Lex, Franz. Portable cleaning apparatus. 4,357,730, Cl. 15-344.000.

Li, Thomas M.: *See*—
Albarella, James P.; Carrico, Robert J.; and Li, Thomas M., 4,358,604, Cl. 560-40.000.

Liberty Embroidery, Inc.: *See*—
Stockton, Allen L., 4,357,885, Cl. 112-103.000.

Libit, Sidney M. Snap container closure. 4,358,032, Cl. 222-498.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Schmidt, Eckehard; Rusch, Dieter; and Tauber, Manfred, 4,358,331, Cl. 156-275.500.

Lienenluke, Paul: *See*—
Julius, Volker; and Lienenluke, Paul, 4,358,165, Cl. 308-22.000.

Lifecycle, Inc.: *See*—
Sweeney, James S., Jr., 4,358,105, Cl. 272-73.000.

Lightstone, John B.: *See*—
Detz, Clifford M.; and Lightstone, John B., 4,358,046, Cl. 228-176.000.

Ligozat, Henri: *See*—
Lemercier, Pierre; Marchal, Paul; Moreau, Jean-Pierre; Vertut, Jean; and Ligozat, Henri, 4,357,764, Cl. 37-54.000.

Lin, Jacob W.: *See*—
Chang, Kuo H.; Lee, Tzuo-Chang; and Lin, Jacob W., 4,358,519, Cl. 430-2.000.

Lin, Sheng H.: *See*—
Foss, Stephen D.; and Lin, Sheng H., 4,357,824, Cl. 73-19.000.

Lincoln, Thomas C., to Malco. Twist pin. 4,358,180, Cl. 339-252.00R.

Link, Christoph: *See*—
Hefter, Josef; Heitmann, Peter; Link, Christoph; Schultz, Hans-Joachim; Stotz, Wolf-Gunter; and Volz, Karl, 4,357,743, Cl. 29-116.0AD.

Linsinger, Ernst. Process and tool for deburring flame-cut sheet metal elements. 4,357,817, Cl. 72-71.000.

Linssen, Henricus W. M.: *See*—
Bijma, Jan; and Linssen, Henricus W. M., 4,358,703, Cl. 313-448.000.

Lipman, Kenneth, to United Technologies Corporation. Inverter with individual commutation circuit. 4,358,820, Cl. 363-135.000.

Lipoma, Phillip C., to Astro Safety Products Inc. Calibration of analyzers employing radiant energy. 4,358,679, Cl. 250-252.100.

Lira, Heriberto R. Automatic machine for assembling universal roller bearings. 4,357,749, Cl. 29-724.000.

Littleford, Philip O. Electrode and method for endocardial atrial pacing. 4,357,947, Cl. 128-786.000.

Litton Industrial Products, Inc.: *See*—
MacDonald, Daniel J.; and Jones, Thomas H., 4,358,695, Cl. 310-105.000.

Liu, James; and Lundin, Charles E., deceased (by Lundin, Bonnie R., legal representative), to University Patents, Inc. Alloys for hydrogen storage. 4,358,316, Cl. 75-123.00N.

Liu, Joseph C.; Wagner, Paul D.; and Keuper, John J., to Siemens-Allis, Inc. Permanent magnet synchronous motor rotor. 4,358,696, Cl. 310-156.000.

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Liu, Kindtoken H. D.; and Hamrin, Charles E., Jr., to United States of America, Energy. Hydrodesulfurization and hydrodenitrogenation catalysts obtained from coal mineral matter. 4,358,398, Cl. 252-440.000.

LKB-Produkter AB: *See*—
Rasmussen, Soren W., 4,358,470, Cl. 427-4.000.

Lo, Young S.; and Munson, Harry R., Jr., to A. H. Robins Company, Inc. Synthesis of 4-amino-1,2-hydrocarbyl pyrazolidines via 4-nitro analogs. 4,358,599, Cl. 548-356.000.

LoCascio, James J.; and Jarrett, Robert B., to Motorola, Inc. Driver circuit for use with inductive loads or the like. 4,358,812, Cl. 361-152.000.

LoCascio, James J.: *See*—
Jarrett, Robert B.; and LoCascio, James J., 4,358,689, Cl. 307-264.000.

Lock, Alan H., to Rolls-Royce Limited. Strain gauge simulator. 4,357,823, Cl. 73-1.00B.

Loh, Raymond D. Y.: *See—*
Domoleczny, James D.; Loh, Raymond D. Y.; Manske, Hans E.; Marchese, Joseph N.; and Michelotti, Carl A., 4,358,792, Cl. 358-254.000.

Lohmann-Werke GmbH & Co. KG: *See—*
Bielemeier, Hans, 4,358,817, Cl. 362-386.000.

Lohrman, Richard D., to Owens-Illinois, Inc. Safety closure and container with dispensing spout. 4,358,031, Cl. 222-153.000.

Long, Charles N., to A-T-O Inc. Spindle for capping machine. 4,357,787, Cl. 53-317.000.

Long, Glen F.: *See—*
Paraghamian, Aram C.; and Long, Glen F., 4,358,275, Cl. 434-258.000.

Look S.A.: *See—*
Beyl, Jean J. A., 4,358,132, Cl. 280-628.000.

Lord Corporation: *See—*
Zimmer, David J.; Sexsmith, Frederick H.; and Howard, Dennis D., 4,358,476, Cl. 427-44.000.

L'Oreal: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,358,286, Cl. 8-405.000.

Loreck, Heinz: *See—*
Bleckmann, Hans W.; and Loreck, Heinz, 4,358,164, Cl. 303-93.000.

Lorrek, Johannes, to Krupp-Koppers GmbH. Arrangement for feeding glowing coke. 4,358,345, Cl. 202-228.000.

Lotte Company Limited: *See—*
Yomoda, Kenju, 4,358,029, Cl. 222-133.000.

Lousig-Nont, Gregory M. Honesty testing and scoring evaluator. 4,358,279, Cl. 434-363.000.

Lovey, Raymond G.: *See—*
Bristol, James A.; and Lovey, Raymond G., 4,358,453, Cl. 424-256.000.
Bristol, James A.; and Lovey, Raymond G., 4,358,454, Cl. 424-256.000.

Lubrizol Corporation, The: *See—*
Rysek, Joseph J., 4,358,509, Cl. 428-461.000.

Lucas Industries Limited: *See—*
Brotherston, Colin P., 4,358,255, Cl. 417-462.000.
Jefferson, John R., 4,358,256, Cl. 417-462.000.
Pierce, Charles F. E.; Waldock, George R.; and Woolford, Noel J., 4,358,063, Cl. 242-7.030.
Price, Anthony G.; and Anderson, Robert A., 4,358,002, Cl. 188-71.900.

Luccarelli, Domenick, Jr.: *See—*
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,357,949, Cl. 131-276.000.

Lundin, Bonnie R., legal representative: *See—*
Liu, James; and Lundin, Charles E., deceased, 4,358,316, Cl. 75-123.00N.

Lundin, Charles E., deceased: *See—*
Liu, James; and Lundin, Charles E., deceased, 4,358,316, Cl. 75-123.00N.

Lundquist, Roger J., to General Motors Corporation. Filler tube fuel strainer. 4,358,372, Cl. 210-172.000.

Lupinski, John H.: *See—*
Byrne, Martin A.; and Lupinski, John H., 4,358,419, Cl. 264-111.000.

Luwa AG: *See—*
Gasser, Hermann; Curiger, Karl; and Novak, Peter, 4,357,793, Cl. 57-304.000.

Lyon, Robert C.; Booton, Alan J.; and Kerfoot, Francis A., to BICC Limited. Method of shaping metal. 4,357,818, Cl. 72-177.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Kobler, Ingo; and Burger, Rainer, 4,357,871, Cl. 101-350.000.
Simeth, Claus; and Pietsch, Erich, 4,357,872, Cl. 101-350.000.

MacDonald, Daniel J.; and Jones, Thomas H., to Litton Industrial Products, Inc. Eddy current coupling having bearing flux shunt. 4,358,695, Cl. 310-105.000.

MacDonald, Peter. 6α-Fluoro-prednisdone 17,21 diesters. 4,358,445, Cl. 424-243.000.

MacGregor International S.A.: *See—*
Yamada, Kikuo; and Onodera, Kiyoshi, 4,357,982, Cl. 160-188.000.

Mack, Mark P.; Decker, Lewis B., Jr.; and Wallace, Adrian L., to Conoco Inc. Method for the preparation of non-crystalline polymers of high molecular weight. 4,358,572, Cl. 526-142.000.

Mackenzie, Harold B.; and Anderson, Ingvar G., to New Life Foundation. Recovered solid waste storage building and method. 4,358,237, Cl. 414-300.000.

Maddock, Mitchell E. Hand held liquid herbicide applicator. 4,357,779, Cl. 47-1.500.

Maeda, Tatuo: *See—*
Ohya, Takeji; and Maeda, Tatuo, 4,357,781, Cl. 49-227.000.

Maeda, Toru: *See—*
Kosuge, Yasuo; Yakabe, Masamori; Oga, Tadanori; and Maeda, Toru, 4,357,965, Cl. 14[illegible]000.

Magai, Donald E., to General [illegible]ectric Company. Fluorescent light unit with dual light levels. 4,358,709, Cl. 315-99.000.

Magai, Donald E., to General Electric Company. Fluorescent light unit with dimmable light level. 4,358,710, Cl. 315-101.000.

Magazian, Harry; Gabrielson, Alan L.; and Cowles, John H., to Torrington Company, The. Bearing element. 4,358,167, Cl. 308-78.000.

Magnavox Company, The: *See—*
Gleason, Joseph P.; and Posthumus, Harry G., 4,358,857, Cl. 455-26.000.

Magnuson, John E.: *See—*
House, Lawrence A.; Kumpa, Vladimir; and Magnuson, John E., 4,358,088, Cl. 254-349.000.

Magnuson, Roland A., to Paccar Inc. Loading apparatus for rapid fire weapon. 4,357,857, Cl. 89-156.000.

Magnussen, Haakon T., Jr.: *See—*
Filgas, Ludovic S., Jr.; and Magnussen, Haakon T., Jr., 4,358,712, Cl. 315-243.000.

Mahmood, Mahmood N.: *See—*
Brown, David E.; and Mahmood, Mahmood N., 4,358,475, Cl. 427-34.000.

Mahon, Joseph P.: *See—*
Gibson, George W.; Mahon, Joseph P.; McAulay, John; and Wolper, Stanley M., 4,357,998, Cl. 187-49.000.

Mahoney, Murray W.; Hamilton, C. Howard; and Paton, Neil E., to Rockwell International Corporation. Method of imparting a fine grain structure to aluminum alloys having precipitating constituents. 4,358,324, Cl. 148-12.70A.

Mailen, James C.: *See—*
Tallent, Othar K.; Crouse, David J.; and Mailen, James C., 4,358,426, Cl. 423-10.000.

Mains, Donald M.: *See—*
Currier, Richard G.; and Mains, Donald M., 4,358,719, Cl. 318-161.000.

Makeev, Anatoly E.; and Sirotinsky, Alexandr A. Apparatus for drying enamel slip coatings on pipes. 4,357,761, Cl. 34-105.000.

Maki, Yoshitaka; Terao, Shinji; and Watanabe, Masazumi, to Takeda Chemical Industries, Ltd. Antiallergic agent. 4,358,461, Cl. 424-331.000.

Makinen, Esa K., to ITP Associates AG. Apparatus and process for dispensing liquid preparations. 4,358,026, Cl. 222-1.000.

Makosch, Gunter, to International Business Machines Corporation. Interferometric measurement apparatus and method having increased measuring range. 4,358,201, Cl. 356-351.000.

Malco: *See—*
Lincoln, Thomas C., 4,358,180, Cl. 339-252.00R.

Malhotra, Sudarshan K., to Dow Chemical Co., The. Process for preparing certain 6-phenoxy-2-pyridinecarboxaldehydes. 4,358,594, Cl. 546-298.000.

Mallon, John: *See—*
Stewart, James A. C.; Armstrong, Brian M.; Gamble, Harold S.; Mallon, John; Monds, Fabian C.; Ryan, William D.; and Wakefield, James, 4,358,759, Cl. 340-554.000.

Maloney, Francis N.: *See—*
McKinnon, John D.; Maloney, Francis N.; Miller, John S.; and Miller, James R., 4,358,113, Cl. 273-67.00A.

Maltais, William F. Belt clip. 4,358,036, Cl. 224-252.000.

MAN Maschinenfabrik Augsburg-Nuernberg AG: *See—*
Mohacsi, Sandor; Hammen, Theodor; and Schmid, Walter, 4,357,879, Cl. 105-199.00R.

Manchenko, Paul: *See—*
Silva, Joseph A.; and Manchenko, Paul, 4,358,708, Cl. 315-58.000.

Manitowoc Company, Inc., The: *See—*
Helm, Percy R.; and Morrow, James G., Sr., 4,358,021, Cl. 212-195.000.

Mankin, Leonid: *See—*
Butler, L. Dennis; and Mankin, Leonid, 4,358,235, Cl. 414-24.500.

Mannesmann Tally Corporation: *See—*
Wagner, Richard E.; and Whitaker, C. Gordon, 4,357,867, Cl. 101-93.090.

Manning, John D., to Carrier Corporation. Method for integrating components of a refrigeration system. 4,357,805, Cl. 62-117.000.

Manske, Hans E.: *See—*
Domoleczny, James D.; Loh, Raymond D. Y.; Manske, Hans E.; Marchese, Joseph N.; and Michelotti, Carl A., 4,358,792, Cl. 358-254.000.

MAP Mikrofilm Apparatebau Dr. Poehler GmbH & Co. KG: *See—*
Poehler, Hermann, 4,357,770, Cl. 40-361.000.

Marathon Electric Corporation: *See—*
Peterson, Gary M.; and Smiltneek, Andrew J., 4,358,698, Cl. 310-187.000.

Marchal, Paul: *See—*
Lemercier, Pierre; Marchal, Paul; Moreau, Jean-Pierre; Vertut, Jean; and Ligozat, Henri, 4,357,764, Cl. 37-54.000.

Marchand, Alain: *See—*
Croteau, Lucien; Marchand, Alain; and Houle, Bertrand, 4,357,766, Cl. 37-281.000.

Marchese, Joseph N.: *See—*
Domoleczny, James D.; Loh, Raymond D. Y.; Manske, Hans E.; Marchese, Joseph N.; and Michelotti, Carl A., 4,358,792, Cl. 358-254.000.

Mariol, James F. Toy train. 4,357,877, Cl. 104-243.000.

Mark, Seymour, to Gulf & Western Manufacturing Co. Coal-aqueous mixtures. 4,358,293, Cl. 44-51.000.

Mark, Victor, to General Electric Company. Process for the preparation of substituted guanidines. 4,358,613, Cl. 564-238.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Fluorinated monophenols and diphenols and method for their preparation. 4,358,624, Cl. 568-722.000.

Markowitz, Jerome; and Schenck, Thomas M., to Allen Organ Company. Method and apparatus for producing mixture tones in an electronic musical instrument. 4,357,851, Cl. 84-1.010.

Markus, Michael: *See—*
Kalu, Georgina; and Markus, Michael, 4,358,355, Cl. 204-159.160.

Marontate, John D. Skirted accordion folding doors. 4,357,979, Cl. 160-84.00R.

Marsala, Charlotte; and Spector, George. Accountants and bookkeepers cardmarks in dispenser pack. 4,358,012, Cl. 206-39.000.

Marten, Rainer; Rosomm, Herbert; and Schwenke, Heinrich, to Gesellschaft fur Kernenergieverwertung in Schiffbau und Schiffahrt mbH. Measuring devices for X-ray fluorescence analysis. 4,358,854, Cl. 378-45.000.

Martinez, Arthur T., to T.A.D. Avanti, Inc. Slide selector switch. 4,358,646, Cl. 200-5.00R.

Maruchi Kohken Co., Ltd.: *See*—
Hasegawa, Masami; Sakai, Utaro; and Naitoh, Takahisa, 4,358,380, Cl. 210-679.000.

Maruchi, Sachio: *See*—
Akimoto, Saburo; Maruchi, Sachio; Fukaya, Masahiro; Shibano, Tomishi; Chimura, Ippei; Asakura, Hiroshi; Kitazume, Keisuke; and Fuse, Shiro, 4,358,494, Cl. 428-40.000.

Maruyama, Y..taka: *See*—
Yokobe, Tetsuo; Masago, Mitsuru; Chihara, Yasuaki; and Maruyama, Yutaka, 4,358,407, Cl. 260-243.300.

Marvin Glass & Associates: *See*—
Rivette, Denni F.; and Disko, Harry, 4,358,104, Cl. 272-31.00R.

Marx, Hans-Jurgen, to Trutzschler GmbH & Co. KG. Method and apparatus for opening textile fiber bales. 4,357,737, Cl. 19-80.00R.

Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., to Owens-Corning Fiberglas Corporation. Reinforced composites. 4,358,320, Cl. 106-282.000.

Masago, Mitsuru: *See*—
Yokobe, Tetsuo; Masago, Mitsuru; Chihara, Yasuaki; and Maruyama, Yutaka, 4,358,407, Cl. 260-243.300.

Masaki, Takanobu: *See*—
Ishii, Toshiaki; and Masaki, Takanobu, 4,357,996, Cl. 187-29.00R.

Masami, Takagi; Shunichi, Nakayama; and Kazuyoshi, Honda, to Matsushita Electric Works, Ltd. Method of forming electrical wiring path on insulative substrate. 4,358,349, Cl. 204-15.000.

Maschinenfabrik Carl Zangs Aktiengesellschaft: *See*—
Kremer, Hubert; and Claassen, Josef, 4,358,038, Cl. 226-53.000.

Maschinenfabrik Meyer AG: *See*—
Seiler, Niklaus; and Seiler, Hanspeter, 4,358,257, Cl. 417-517.000.

Massachusetts Institute of Technology: *See*—
Goudey, Clifford A., 4,358,146, Cl. 294-84.000.

Masuda, Eisuke, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Safety laminate and process for production thereof. 4,358,329, Cl. 156-106.000.

Matay, Istvan M.: *See*—
Derkacs, Thomas; Fetheroff, Charles W.; Matay, Istvan M.; and Toth, Istvan J., 4,358,471, Cl. 427-9.000.

Material Concepts, Inc.: *See*—
Sexton, Richard W., 4,357,985, Cl. 164-61.000.

Mathys, Richard E., Sr.: *See*—
Hedlund, Lee V.; and Mathys, Richard E., Sr., 4,358,798, Cl. 36J-73.000.

Matsuda, Setsuyuki, to Mitsubishi Denki Kabushiki Kaisha. Heat dissipating electrical bushing. 4,358,631, Cl. 174-15.0BH.

Matsuda, Tatsushi: *See*—
Shiraishi, Motoatsu; Matsuda, Tatsushi; and Sano, Masao, 4,358,263, Cl. 425-397.000.

Matsuhisa, Tadaaki: *See*—
Oda, Isao; and Matsuhisa, Tadaaki, 4,357,987, Cl. 165-10.000.

Matsumoto, Hajime; and Suga, Toshihisa, to Toybox Corporation. Toy vehicle and trackway. 4,357,778, Cl. 46-202.000.

Matsushima, Yoshihisa: *See*—
Sakakibara, Tadamori; Matsushima, Yoshihisa; and Kaneko, Katsumi, 4,358,621, Cl. 568-454.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Gamo, Takaharu; Moriwaki, Yoshio; and Yamashita, Toshio, 4,358,432, Cl. 423-644.000.
Namba, Yoshiharu; and Yonezawa, Taketoshi, 4,358,295, Cl. 51-309.000.
Sato, Munekazu; Nishimura, Muneo; and Harada, Taichi, 4,358,813, Cl. 361-263.000.
Shimizu, Ryota; Sasaki, Toshiharu; and Ohara, Naoyuki, 4,358,800, Cl. 360-90.000.
Sugino, Takashi; Wada, Masaru; Shimizu, Hirokazu; and Itoh, Kunio, 4,358,850, Cl. 372-45.000.
Tanaka, Eiichi; Furumai, Koro; Indo, Masahiro; and Kawabata, Norio, 4,358,265, Cl. 431-76.000.
Yamamori, Kiyoshi; Miura, Masayoshi; and Mizoguchi, Akira, 4,358,781, Cl. 346-140.00R.

Matsushita Electric Works, Ltd.: *See*—
Masami, Takagi; Shunichi, Nakayama; and Kazuyoshi, Honda, 4,358,349, Cl. 204-15.000.

Matsushita Electrical Industrial Co. Ltd.: *See*—
Hamane, Tokuhito; Kinoshita, Toshio; and Kihira, Masafumi, 4,358,099, Cl. 269-93.000.

Matter, Robert C., to General Motors Corporation. Wrought lead-calcium-strontium-tin (±barium) alloy for battery components. 4,358,518, Cl. 429-245.000.

Matula, Jouni; and Vikio, Pentti, to Enso-Gutzeit Osakeyhtio . Hydrocyclone. 4,358,369, Cl. 209-211.000.

Matushita, Fumio: *See*—
Takasuka, Kaoru; Arakawa, Tatsumi; Matushita, Fumio; and Kobayashi, Hidehiko, 4,358,782, Cl. 357-2.000.

Matveev, Anatoly S.: *See*—
Antonov, Evgeny A.; Matveev, Anatoly S.; Nikonov, Nikolai I.; Leonov, Boris N.; Razhev, Anatoly V.; and Prokofiev, Vyacheslav I., 4,357,816, Cl. 72-57.000.

Maurer, Fritz: *See*—
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,358,409, Cl. 260-465.00G.

Mauser, Rudolf; and Chmiel, Horst. Cardiotachometer. 4,357,944, Cl. 128-663.000.

Mayer, Gustav; Hinz, Gerhard; Muhs, Herbert; Sturmfels, Georg; and Burger, Hartmut, to Volkswagenwerk Aktiengesellschaft. Front end for a forward control vehicle. 4,358,152, Cl. 296-188.000.

Mayer, Kurt: *See*—
Anselmann, Hans; and Mayer, Kurt. 4,357,956, Cl. 137-514.000.

MCA Disco-Vision, Inc.: *See*—
Jarsen, Manfred H., 4,358,802, Cl. 360-99.000.

McAulay, John: *See*—
Gibson, George W.; Mahon, Joseph P.; McAulay, John; and Wolper, Stanley M., 4,357,998, Cl. 187-49.000.

McCarthy, Harry E.: *See*—
Sass, Allan; McCarthy, Harry E.; Kaufman, Paul R.; and Finney, Clement S., 4,358,344, Cl. 201-4.000.

McCarthy, Shaun L.: *See*—
Lambe, John J.; McCarthy, Shaun L.; and Stadler, Henry L., 4,358,743, Cl. 332-7.510.

McClellan, Gerald V.: *See*—
Branigin, Michael H.; Knebel, Francis P.; and McClellan, Gerald V., 4,358,829, Cl. 364-900.000.

McClure, David E.: *See*—
Atkinson, Joseph G.; Baldwin, John J.; and McClure, David E., 4,358,455, Cl. 424-263.000.

McConnell, Wesley J., to Johnson & Johnson. Gravimetric absorbency tester. 4,357,827, Cl. 73-73.000.

McCormick-Morgan, Inc.: *See*—
Krzak, David W., 4,357,860, Cl. 98-33.00R.

McCrary, Avis L.; and Stevens, Michael G., to Dow Chemical Company, The. Method for preparing high molecular weight epoxy resins containing hydrolyzed epoxy groups. 4,358,577, Cl. 528-89.000.

McDonald, John C.; and Baichtal, James R., to TRW, Inc. Double redundant processor. 4,358,823, Cl. 364-200.000.

McDowell, David E., to Bissell, Inc. Dual brush floor sweeper. 4,357,727, Cl. 15-41.00R.

McHenry, Vincent J.: *See*—
Cheal, James; and McHenry, Vincent J., 4,358,764, Cl. 343-5.0PD.

McKenzie, Everett R.; and Smith, Thomas E. Method of connecting insulated glass frame. 4,357,744, Cl. 29-451.000.

McKinnon, John D.; Maloney, Francis N.; Miller, John S.; and Miller, James R. Hockey stick. 4,358,113, Cl. 273-67.00A.

McMillan, Dale H.: *See*—
Telfer, Alexander; and McMillan, Dale H., 4,358,682, Cl. 250-357.100.

McMillan, William P.: *See*—
Murphy, Carl D.; and McMillan, William P., 4,358,623, Cl. 568-473.000.

McMullan, James P.; and Stevens, Albert, to McMullan, James P. Heater with reinforcing strate. 4,358,668, Cl. 219-528.000.

Medicor Muvek: *See*—
Szasz, Karoly; and Meszaros, Sandor, 4,358,855, Cl. 378-99.000.

Medlin, John W. Pulse adder—subtracter difference transmitter. 4,358,670, Cl. 235-92.0CT.

Medtronic, Inc.: *See*—
Dutcher, Robert G.; and O'Neill, Edward G., 4,357,946, Cl. 128-785.000.
Thompson, David L.; Hartlaub, Jerome T.; and Stein, Marc T., 4,357,943, Cl. 128-419.0PG.

Megerle, Friedrich; and Cordewener, Heinz, to Klockner-Humboldt-Deutz AG. Furnace system for smelting ore concentrate and the like. 4,358,094, Cl. 266-190.000.

Mehron, Martin E., to Sanders Associates, Inc. Jamming signal reduction system. 4,358,766, Cl. 343-18.00E.

Meier, Friedrich, to Rochling-Burbach Weiterverarbeitung GmbH. Device for internally deburring tubes. 4,358,231, Cl. 409-299.000.

Meinardi, Giuseppe: *See*—
Perrone, Ettore; Nannini, Giuliano; Alpegiani, Marco; Giudici, Franco; and Meinardi, Giuseppe, 4,358,448, Cl. 424-246.000.

Meissner, David C.: *See*—
Sanzenbacher, Charles W.; and Meissner, David C., 4,358,310, Cl. 75-25.000.

Melan, Michael: *See*—
Distler, Dieter; and Melan, Michael, 4,358,403, Cl. 524-745.000.

Melcher, Gerhard: *See*—
Weigel, Horst; and Melcher, Gerhard, 4,358,311, Cl. 75-26.000.

Melnyk, William, to Ex-Cell-O Corporation. Crimped tube joint-shoulder ribs. 4,357,990, Cl. 165-76.000.

Mendelsohn, Marshall H.; and Gruen, Dieter M., to United States of America, Energy. Oxygen stabilized zirconium vanadium intermetallic compound. 4,358,429, Cl. 423-248.000.

Mercantile & Technical Promotions Inc.: *See*—
Chiquiar-Arias, Marcelo, 4,358,028, Cl. 222-107.000.

Mercer, Roger W.: *See*—
Hay, Louis E.; and Mercer, Roger W., 4,358,269, Cl. 433-60.000.

Merck & Co., Inc.: *See*—
Atkinson, Joseph G.; Baldwin, John J.; and McClure, David E., 4,358,455, Cl. 424-263.000.
Hannah, John, 4,358,447, Cl. 424-246.000.

Merrell Dow Pharmaceuticals Inc.: *See*—
Jones, Winton D.; Kane, John M.; and Miller, Francis P., 4,358,457, Cl. 424-269.000.

Merrick, Howard F.; Curwick, LeRoy R.; and Benn, Raymond C., to International Nickel Company, Inc., The. Nickel-based alloy. 4,358,318, Cl. 420-449.000.

Merz, Paul L., to United States of America, Navy. Radiation resistant projectile canister liner. 4,357,855, Cl. 89-1.816.

Messer Griesheim GmbH: *See—*
Steigerwald, Karl-Heinz; Anderl, Peter; Kappelsberger, Erwin; Monch, Clauspeter; Konig, Dieter; and Scheffels, Wilheim, 4,358,657, Cl. 219-121.0EN.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Jager, Ernst H., 4,357,873, Cl. 102-310.000.
Lange, Benjamin O.; and Scheit, Arnold, 4,358,076, Cl. 244-164.000.

Meszaros, Sandor: *See—*
Szasz, Karoly; and Meszaros, Sandor, 4,358,855, Cl. 378-99.000.

Metcalf, Dale F. Wire guiding device. 4,358,089, Cl. 254-415.000.

Metco, Inc.: *See—*
Ingham, Herbert S.; and Dittrich, Ferdinand J., 4,358,053, Cl. 239-79.000.

Mettetal, Bonnie K.; and Kolonko, Richard P., Jr., to Dow Chemical Company, The. Removal of trace aldehydes from carboxylic acids. 4,358,347, Cl. 203-38.000.

Metzger, Frederick B.: *See—*
Hanson, Donald B.; and Metzger, Frederick B., 4,358,246, Cl. 416-223.00R.

Mezzanotte, Mario; and Turchetti, Gianni, to Societa' Pneumatici Pirelli S.p.A. Radial tires comprising reinforcements in the sidewalls. 4,357,976, Cl. 152-354.0RB.

Michelotti, Carl A.: *See—*
Domoleczny, James D.; Loh, Raymond D. Y.; Manske, Hans E.; Marchese, Joseph N.; and Michelotti, Carl A., 4,358,792, Cl. 358-254.000.

Michener, Curtis J.: *See—*
Garoutte, Kurt F.; and Michener, Curtis J., 4,358,514, Cl. 429-181.000.

Midland-Ross Corporation: *See—*
Weber, Hans B., 4,357,880, Cl. 105-206.00R.

Midrex Corporation: *See—*
Sanzenbacher, Charles W.; and Meissner, David C., 4,358,310, Cl. 75-25.000.

Miles Laboratories, Inc.: *See—*
Albarella, James P.; Carrico, Robert J.; and Li, Thomas M., 4,358,604, Cl. 560-40.000.

Millard, John B.: *See—*
Johnson, Bruce K.; and Millard, John B., 4,358,186, Cl. 354-27.000.

Miller, Coleman J.; and Conn, James K., to Westinghouse Electric Corp. Rotary coupling joint. 4,358,746, Cl. 333-261.000.

Miller, Emmett: *See—*
Johnston, Merrill F.; Shumka, Alex; Miller, Emmett; and Evans, Kenneth C., 4,358,732, Cl. 324-73.00R.

Miller, Francis P.: *See—*
Jones, Winton D.; Kane, John M.; and Miller, Francis P., 4,358,457, Cl. 424-269.000.

Miller, James R.: *See—*
McKinnon, John D.; Maloney, Francis N.; Miller, John S.; and Miller, James R., 4,358,113, Cl. 273-67.00A.

Miller, John S.: *See—*
McKinnon, John D.; Maloney, Francis N.; Miller, John S.; and Miller, James R., 4,358,113, Cl. 273-67.00A.

Miller, Thomas H.: *See—*
Weber, Russell S.; Miller, Thomas H.; and von den Stemmen, Alfons, 4,358,424, Cl. 422-68.000.

Mining Supplies Limited: *See—*
Needham, Raymond, 4,358,161, Cl. 299-87.000.

Ministry of International Trade & Industry: *See—*
Tamura, Koichiro; Tajima, Hiroaki; Okada, Yoshikuni; and Umeyama, Shinji, 4,358,858, Cl. 455-607.000.

Minnesota Mining and Manufacturing Company: *See—*
Holcomb, Allen G.; and Spoo, Bruce H., 4,358,559, Cl. 524-380.000.
Pearson, Walter C., 4,358,328, Cl. 156-73.100.
Randklev, Ronald M., 4,358,549, Cl. 523-117.000.

Minoda, Minoru: *See—*
Ishiwata, Mamoru; and Minoda, Minoru, 4,358,523, Cl. 430-207.000.

Mirkoz Diesel es Hutotechnikai Szovetkezet: *See—*
Morva, Alajos; and Somogyi, Ferenc, 4,358,374, Cl. 210-242.300.

Miska, Stanley R., to Schlegel Corporation. Pile weatherstrip having a diamond-shaped barrier fin and method of manufacture. 4,358,497, Cl. 428-85.000.

Mitchell, Arthur W.; and Cornish, Elbert J. Invalid vehicles. 4,358,126, Cl. 280-242.0WC.

Mitchell, Tyrone D.: *See—*
Lampe, Warren R.; Mitchell, Tyrone D.; and Cella, James A., 4,358,575, Cl. 528-17.000.

Mitrzyk, Jan C., Sr.: *See—*
Fischer, Charles P.; Peterson, Andrew A.; Doi, Edward J.; Gossoo, Rodney W.; and Mitrzyk, Jan C., Sr., 4,357,742, Cl. 29-33.00M.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Ishii, Toshiaki; and Masaki, Takanobu, 4,357,996, Cl. 187-29.00R.
Kinoshita, Shigeji, 4,358,686, Cl. 250-492.200.
Matsuda, Setsuyuki, 4,358,631, Cl. 174-15.0BH.
Satoh, Toshio; Mizusawa, Motoo; and Takeda, Fumio, 4,358,770, Cl. 343-786.000.
Tamii, Seizo, 4,358,688, Cl. 307-77.000.

Mitsubishi Petrochemical Company Limited: *See—*
Hayama, Kazuhide; and Narazaki, Kanji, 4,358,567, Cl. 525-359.400.
Tobinaga, Takeshi, 4,358,570, Cl. 525-456.000.

Mitsubishi Rayon Company, Ltd.: *See—*
Tahara, Yasuteru; and Koike, Kazuyoshi, 4,357,826, Cl. 73-37.700.
Tanaka, Hiroyuki; Aosai, Fumito; Kido, Koichiro; and Yamamoto, Shogo, 4,358,508, Cl. 428-458.000.

Mitsubishi Steel Mfg. Co., Ltd.: *See—*
Abe, Yoshihiko, 4,358,317, Cl. 75-126.00C.

Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See—*
Hamada, Yoshikazu, 4,358,141, Cl. 292-216.000.

Mitsui, Yoshihiro, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Thermal printer and improved platen. 4,358,776, Cl. 346-76.0PH.

Miura, Masayoshi: *See—*
Yamamori, Kiyoshi; Miura, Masayoshi; and Mizoguchi, Akira, 4,358,781, Cl. 346-140.00R.

Miyake, Noriaki: *See—*
Ban, Keisuke; Daimaru, Akimasa; and Miyake, Noriaki, 4,357,986, Cl. 164-97.000.

Miyashiro, James J.: *See—*
Shinohara, Makoto; and Miyashiro, James J., 4,358,552, Cl. 523-443.000.

Miyoshi, Kazuhito: *See—*
Iida, Kiichi; Kawamoto, Tadashi; and Miyoshi, Kazuhito, 4,358,354, Cl. 204-159.150.

Mizoguchi, Akira: *See—*
Yamamori, Kiyoshi; Miura, Masayoshi; and Mizoguchi, Akira, 4,358,781, Cl. 346-140.00R.

Mizusawa, Akira: *See—*
Takegawa, Tetuo; Kikuchi, Yoichi; and Mizusawa, Akira, 4,358,234, Cl. 411-57.000.

Mizusawa, Motoo: *See—*
Satoh, Toshio; Mizusawa, Motoo; and Takeda, Fumio, 4,358,770, Cl. 343-786.000.

Mobil Oil Corporation: *See—*
Chen, Nai Y.; and Walsh, Dennis E., 4,358,290, Cl. 44-1.00F.
Chu, Chin C., 4,358,397, Cl. 252-437.000.
Haag, Werner O.; Olson, David H.; and Rodewald, Paul G., 4,358,395, Cl. 252-411.00R.
Kaufman, Marvin L.; and Salathe, George F., 4,358,571, Cl. 525-524.000.
Peters, Alan W., 4,358,361, Cl. 208-89.000.
Smith, Fritz A.; and Tabak, Samuel A., 4,358,362, Cl. 208-91.000.
Smith, Fritz A., 4,358,363, Cl. 208-91.000.
Yan, Tsoung Y.; and Audeh, Costandi A., 4,358,554, Cl. 524-69.000.

Mobius Communication, Inc.: *See—*
Olds, Howard F., 4,357,771, Cl. 40-444.000.

Mod, William A.: *See—*
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,358,412, Cl. 260-968.000.
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,358,545, Cl. 521-27.000.

Mohacsi, Sandor; Hammen, Theodor; and Schmid, Walter, to MAN Maschinenfabrik Augsburg-Nuernberg AG. Air springing bogie traction link suspension. 4,357,879, Cl. 105-199.00R.

Moll, Franz: *See—*
von Konig, Anita; Moll, Franz; and Rosenhahn, Lothar, 4,358,531, Cl. 430-434.000.

Molt, Kenneth R., to Carstab Corporation. Stabilizers for halogen containing polymers comprising alkyltin compounds, zinc mercaptoesters and basic alkali or alkaline earth metal compounds. 4,358,555, Cl. 524-181.000.

Monarch Marking Systems, Inc.: *See—*
Pabodie, Robert M., 4,357,868, Cl. 101-110.000.

Monch, Clauspeter: *See—*
Steigerwald, Karl-Heinz; Anderl, Peter; Kappelsberger, Erwin; Monch, Clauspeter; Konig, Dieter; and Scheffels, Wilheim, 4,358,657, Cl. 219-121.0EN.

Monds, Fabian C.: *See—*
Stewart, James A. C.; Armstrong, Brian M.; Gamble, Harold S.; Mallon, John; Monds, Fabian C.; Ryan, William D.; and Wakefield, James, 4,358,759, Cl. 340-554.000.

Monsanto Company: *See—*
Coran, Aubert Y.; and Patel, Raman, 4,358,553, Cl. 524-37.000.

Monsour, James R. Propeller and piston combination for internal combustion engines. 4,357,915, Cl. 123-45.00R.

Montalvo, Arthur A. Can crushing device. 4,358,142, Cl. 294-19.00R.

Mooberry, Jared B.; and Archie, William C., Jr., to Eastman Kodak Company. Blocked photographically useful compounds and photographic compositions, elements and processes employing them. 4,358,525, Cl. 430-217.000.

Moore, Alan, to Rolls Royce Limited. Seals. 4,358,120, Cl. 277-192.000.

Moore, Ronald D., to Chivas Products, Limited. Stand-off mounting system for assist straps. 4,357,734, Cl. 16-125.000.

Mora, Erwin P.: *See—*
Harris, Charles G.; Mora, Erwin P.; Singh, Mahendra P.; and Solberg, David P., 4,357,806, Cl. 62-186.000.

Moreau, Jean-Pierre: *See—*
Lemercier, Pierre; Marchal, Paul; Moreau, Jean-Pierre; Vertut, Jean; and Ligozat, Henri, 4,357,764, Cl. 37-54.000.

Morel, Claude: *See—*
Koletar, Gabor I.; Frost, Jonathan R.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,358,451, Cl. 424-251.000.

Morel, Pierre A. A.; and Pittavino, Marc P. L., to Agence Centrale de Services (ACDS). Alarm transmission system. 4,358,756, Cl. 340-539.000.

Morgan, Larry E., to United States of America, National Aeronautics and Space Administration. Serial data correlator/code translator. 4,358,846, Cl. 371-6.000.

Mori, Shigeo: *See—*
Horikoshi, Ichiro; Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; and Fujita, Susumu, 4,358,642, Cl. 179-115.50R.

Morin, Joseph P. Permanent signal holding module. 4,358,639, Cl. 179-22.000.

Morita, Yasuyuki, to Toyo Kogyo Co., Ltd. Rotary piston engine sealing mechanisms. 4,358,259, Cl. 418-122.000.

Moriuchi, Yousuke; and Shimizu, Atsushi, to Terumo Corporation. Apparatus for detoxifying body fluid. 4,358,376, Cl. 210-282.000.

Moriwaki, Yoshio: *See—*
Gamo, Takaharu; Moriwaki, Yoshio; and Yamashita, Toshio, 4,358,432, Cl. 423-644.000.

Moriya, Kikuo: *See—*
Sakurai, Nobuo; and Moriya, Kikuo, 4,357,848, Cl. 83-801.000.

Moriyama, Shigeo; Harada, Tatsuo; and Ito, Masaaki, to Hitachi, Ltd. Apparatus for moving table on stage. 4,358,198, Cl. 355-53.000.

Morris, Richard D.; and Lane, L. Thomas, to Carrier Corporation. Collapsible bulkhead. 4,358,233, Cl. 410-127.000.

Morrissey, Joseph: *See—*
DeBolt, Harold E.; Morrissey, Joseph; and Suplinskas, Raymond J., 4,358,473, Cl. 427-10.000.

Morrow, James G., Sr.: *See—*
Helm, Percy R.; and Morrow, James G., Sr., 4,358,021, Cl. 212-195.000.

Morse, David L.: *See—*
Hares, George B.; Kerko, David J.; and Morse, David L., 4,358,542, Cl. 501-13.000.

Morton, David C. Door locking alarm device. 4,358,758, Cl. 340-546.000.

Morton-Norwich Products, Inc.: *See—*
Shinohara, Makoto; and Miyashiro, James J., 4,358,552, Cl. 523-443.000.

Morva, Alajos; and Somogyi, Ferenc, to Mirkoz Diesel es Hutotechnikai Szovetkezet. Stripping apparatus for the removal of contaminants floating on a liquid. 4,358,374, Cl. 210-242.300.

Moseley, Stephen L.: *See—*
Falkow, Stanley; and Moseley, Stephen L., 4,358,535, Cl. 435-5.000.

Moss, Owen R.; Clark, Mark L.; and Rossignol, E. John, to Hazleton Systems, Inc. Device for producing a fluid stream of varying composition. 4,357,903, Cl. 119-15.000.

Mostek Corporation: *See—*
Spohnheimer, John V., 4,358,659, Cl. 219-121.0LB.

Mostert, Johannes: *See—*
Noomen, Arie; Mostert, Johannes; and Wolters, Egbert, 4,358,477, Cl. 427-54.100.

Mostmans, Joseph H.: *See—*
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,358,449, Cl. 424-248.580.

Mote, Terry A. Automatic grinding attachment for saw grinders. 4,357,841, Cl. 76-41.000.

Motorola, Inc.: *See—*
Bennett, Robert M., 4,358,737, Cl. 328-138.000.
Brown, Leland T., 4,358,645, Cl. 179-170.0NC.
Jarrett, Robert B.; and LoCascio, James J., 4,358,689, Cl. 307-264.000.
Kyu, Shikun; and Hepworth, Edward C., 4,358,825, Cl. 364-200.000.
LoCascio, James J.; and Jarrett, Robert B., 4,358,812, Cl. 361-152.000.

Moyes, William C.; Gerber, Russell W.; and Ehrbar, Richard, to Sunbelt Communications, Ltd. Method and apparatus for conducting an opinion survey. 4,358,277, Cl. 434-322.000.

MPD Technology Corporation: *See—*
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,358,396, Cl. 252-430.000.
Rhoda, Richard N., 4,358,352, Cl. 204-47.000.

Mugrauer, Hubert, to Siemens Aktiengeselischaft. Device for the exchange of a developer medium found in a developer station. 4,358,196, Cl. 355-10.000.

Muhs, Herbert: *See—*
Mayer, Gustav; Hinz, Gerhard; Muhs, Herbert; Sturmfels, Georg; and Burger, Hartmut, 4,358,152, Cl. 296-188.000.

Muldoon, Terry L.: *See—*
Kissell, Fred N.; Muldoon, Terry L.; Schroeder, William E., Jr.; and Peterson, Carl R., 4,358,160, Cl. 299-43.000.

Muller, George H., to Detroit Neurosurgical Foundation. Tissue pneumatic separator structure. 4,357,940, Cl. 128-303.00R.

Muller, Hanns P.: *See—*
Stemmler, Ingo; Muller, Hanns P.; and Wagner, Kuno, 4,358,619, Cl. 568-388.000.

Muller, Hans, to Grapha-Holding AG. Apparatus for singularizing stacked sheets. 4,358,100, Cl. 271-11.000.

Mumper, Thomas O.: *See—*
Jacono, Louis; and Mumper, Thomas O., 4,358,550, Cl. 523-348.000.

Munson, Harry R., Jr.: *See—*
Lo, Young S.; and Munson, Harry R., Jr., 4,358,599, Cl. 548-356.000.

Murakami, Fumikazu: *See—*
Horikoshi, Ichiro; Mori, Shigeo; Murakami, Fumikazu; Hara, Yoshiaki; and Fujita, Susumu, 4,358,642, Cl. 179-115.50R.

Murakami, Yasushi: *See—*
Takematsu, Tetsuo; Takeuchi, Masaki; Okada, Masanori; Sugiyama, Hiroshi; and Murakami, Yasushi, 4,358,309, Cl. 71-120.000.

Murmann, Walter; and Ponchiroli, Osvaldo, to Laboratorio Guidotti & C. S.p.A. Nicotinic derivatives of glucosamine and related pharmaceutical compositions. 4,358,441, Cl. 424-180.000.

Murphy, Carl D.; and McMillan, William P., to Celanese Corporation. Process for catalytically converting methanol to formaldehyde. 4,358,623, Cl. 568-473.000.

Murray, Leonard Q. Telephone security device. 4,358,640, Cl. 179-90.00D.

Musschoot, Albert, to General Kinematics Corporation. Apparatus for drying pulverulent material. 4,357,760, Cl. 34-56.000.

Nagai, Kiyoshi. Transparent vacuum insulation plate. 4,358,490, Cl. 428-34.000.

Naganoma, Masanori; Kondo, Nobuo; Senda, Eiichi; Hibi, Hitoshi; Suzuki, Kunihiko; Ohta, Nobuyoshi; and Ito, Katsunori, to Nippondenso Co., Ltd. Air conditioner control method and apparatus. 4,358,050, Cl. 236-13.000.

Nagata, Seigo; and Saito, Iwao, to Daiwa Can Company, Ltd. Method for conveying articles by air flow and apparatus for withdrawing conveyed articles. 4,358,226, Cl. 406-82.000.

Nagely, John L., to Fluid Energy Systems Corporation. High pressure gear pump or motor with axial retaining means and radial balancing means. 4,358,258, Cl. 418-71.000.

Naito, Yoshiro: *See—*
Nakano, Shiro; Naito, Yoshiro; Nakamura, Shigeki; Ikena, Tosimasa; and Tanaka, Kazuo, 4,358,474, Cl. 427-12.000.

Naitoh, Takahisa: *See—*
Hasegawa, Masami; Sakai, Utaro; and Naitoh, Takahisa, 4,358,380, Cl. 210-679.000.

Najer, Henry: *See—*
Koletar, Gabor I.; Frost, Jonathan R.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,358,451, Cl. 424-251.000.

Nakagawa, Koichiro: *See—*
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,358,722, Cl. 318-661.000.
Iwakane, Takanobu; Kai, Tohru; Hirose, Kenji; and Nakagawa, Koichiro, 4,358,726, Cl. 318-798.000.

Nakajima, Yukio: *See—*
Kondo, Isao; and Nakajima, Yukio, 4,358,187, Cl. 354-33.000.

Nakamichi, Koya: *See—*
Tada, Masahiro; Ichikawa, Hirokazu; Fukushima, Mitsuo; Nakamichi, Koya; Ouchi, Koji; and Ishigaki, Yoshio, 4,358,769, Cl. 343-742.000.

Nakamura, Norihiko, to Rhythm Watch Company Limited. Electronic timepiece with a time striking device. 4,358,838, Cl. 368-75.000.

Nakamura, Shigeki: *See—*
Nakano, Shiro; Naito, Yoshiro; Nakamura, Shigeki; Ikena, Tosimasa; and Tanaka, Kazuo, 4,358,474, Cl. 427-12.000.

Nakamura, Shoichi: *See—*
Takeuchi, Tetsuo; and Nakamura, Shoichi, 4,358,381, Cl. 210-727.000.

Nakano, Jiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of indicating a basic air-fuel ratio condition of an internal combustion engine. 4,357,828, Cl. 73-117.300.

Nakano, Masao: *See—*
Nishikawa, Yoshiyasu; Harada, Chosei; and Nakano, Masao, 4,358,244, Cl. 416-186.00R.

Nakano, Shiro; Naito, Yoshiro; Nakamura, Shigeki; Ikena, Tosimasa; and Tanaka, Kazuo, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Method for electric recording. 4,358,474, Cl. 427-12.000.

Nakao, Toshihisa: *See—*
Osanai, Akira; and Nakao, Toshihisa, 4,358,807, Cl. 360-130.320.

Namba, Yoshiharu; and Yonezawa, Taketoshi, to Matsushita Electric Industrial Co., Ltd. Polishing method. 4,358,295, Cl. 51-309.000.

Nancarrow, Peter H., to Nancarrow, Rachel M. Optical printing and typesetting machinery. 4,358,185, Cl. 354-13.000.

Nancarrow, Rachel M.: *See—*
Nancarrow, Peter H., 4,358,185, Cl. 354-13.000.

Nannen, Jack W. Wood splitting maul. 4,357,974, Cl. 145-2.00R.

Nannini, Giuliano: *See—*
Perrone, Ettore; Nannini, Giuliano; Alpegiani, Marco; Giudici, Franco; and Meinardi, Giuseppe, 4,358,448, Cl. 424-246.000.

Naomi, Yamaguchi; Kohji, Noguchi; and Kazuo, Tsuzura, to Asahi Kasei Kogyo Kabushiki Kaisha. Spherical porous cross-linked copolymers of chloromethylstyrene and divinylbenzene and the derivative thereof. 4,358,546, Cl. 521-32.000.

Narazaki, Kanji: *See—*
Hayama, Kazuhide; and Narazaki, Kanji, 4,358,567, Cl. 525-359.400.

Nardin, Roy, to ILC Data Device Corporation. Micro time and phase stepper. 4,358,741, Cl. 331-2.000.

Narozny, Ronald S., to Thomas & Betts Corporation. Connector for electrical interconnection of circuit board and flat multiconductor cable. 4,358,172, Cl. 339-17.00F.

Narumiya, Tsuneaki; Sato, Take; and Iwasawa, Shigeru, to Bridgestone Tire Company Limited. Ink roller and a method of producing the same. 4,358,505, Cl. 428-332.000.

Nash, Culver R., to Chrysler Corporation. Tailgate handle and latching mechanism. 4,358,150, Cl. 296-50.000.

Nash, Stephen M.; Koch, Kay F.; and Hoehn, Marvin M., to Eli Lilly and Company. Antibiotics A6888C and A6888X. 4,358,584, Cl. 536-7.100.

National Distillers & Chemical Corp.: *See*—
Kwiatek, Jack; and Brima, Thomas S., 4,358,601, Cl. 549-295.000.

National Semiconductor Corporation: *See*—
George, Peter K., 4,358,830, Cl. 365-39.000.

National Union Electric Corporation: *See*—
Ceseri, Anthony, 4,358,098, Cl. 267-141.500.

Nattermann & Cie GmbH: *See*—
Wirtz-Peitz, Ferdinand; Probst, Manfred; and Winkelmann, Johannes, 4,358,442, Cl. 424-199.000.

Navarro, John N., to Pass and Seymour, Inc. Moisture resistant clamp for portable cables. 4,358,079, Cl. 248-56.000.

Naylor, Robert W., to CTS Corporation. Linear electric motor. 4,358,691, Cl. 310-12.000.

Nazet, Rene; and Ribout, Pierre, to Thomson-CSF. Insulated collector for an electronic power tube and a tube equipped with such a collector. 4,358,706, Cl. 315-5.380.

Nedetzky, Walter, to AVL AG. Method and apparatus for monitoring and controlling the charging operation of an elongated measuring chamber. 4,358,423, Cl. 422-68.000.

Needham, Raymond, to Mining Supplies Limited. Mining equipment. 4,358,161, Cl. 299-87.000.

Nelson, Alexander. Rotary-reactive internal combustion engine 4-360. 4,357,794, Cl. 60-39.340.

Nelson, David A. Wide-band direct-current coupled transistor amplifier. 4,358,739, Cl. 330-255.000.

Nemec, Joseph W.; and Cholod, Michael S., to Rohm and Haas Company. Preparation of methacrolein and methacrylonitrile from tert-butyl alkanoates. 4,358,622, Cl. 568-470.000.

Netta, Louis A.; and Hidassy, Laszlo, to Thomas & Betts Corporation. Tie ejecting apparatus in a bundling tie applying tool. 4,357,970, Cl. 140-123.600.

Neuzil, Richard W.; and Priegnitz, James W., to UOP Inc. Process for separating a ketose from an aldose by selective adsorption. 4,358,322, Cl. 127-46.200.

Neville, Donald, to Plastiglide Manufacturing Corporation. Shock absorbing roller. 4,357,733, Cl. 16-107.000.

Neville, Warren H. Furnace system with reheated flue gas recirculation. 4,358,268, Cl. 432-180.000.

New England Nuclear Corporation: *See*—
O'Brien, Robert E.; and Krieger, Jeanne K., 4,358,401, Cl. 252-628.000.
Tzodikov, Nathan R.; and O'Brien, Robert E., 4,358,434, Cl. 424-1.000.

New Life Foundation: *See*—
Mackenzie, Harold B.; and Anderson, Ingvar G., 4,358,237, Cl. 414-300.000.

Newburger, Babette B. Bathing assembly. 4,357,721, Cl. 4-585.000.

Newcomb, Alan L., to Smith International Inc. Composite grease for rock bit bearings. 4,358,384, Cl. 252-19.000.

Neyrpic: *See*—
Boireau, Claude, 4,358,767, Cl. 343-117.00R.

NGK Insulators, Ltd.: *See*—
Fujita, Tadashi; and Soejima, Shigeo, 4,358,428, Cl. 423-239.000.
Oda, Isao; and Matsuhisa, Tadaaki, 4,357,987, Cl. 165-10.000.

NHK Spring Co., Ltd.: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akiro; Katayama, Shitomi; and Nomura, Suguru, 4,358,507, Cl. 428-429.000.

Nielsen, Kurt F.: *See*—
Jensen, Niels D.; and Nielsen, Kurt F., 4,358,299, Cl. 55-204.000.

Nielsen, Steven T.; and Carey, Robert S., to Beckman Instruments, Inc. Method of making a thin wall centrifuge tube with improved polymer properties. 4,358,420, Cl. 264-538.000.

Niemi, Antti. Method and apparatus for the incorporation of varying flow in the control of process quantities. 4,358,821, Cl. 364-152.000.

Nifco Inc.: *See*—
Notoya, Yoshiaki, 4,358,081, Cl. 248-73.000.
Takegawa, Tetuo; Kikuchi, Yoichi; and Mizusawa, Akira, 4,358,234, Cl. 411-57.000.

Nightingale, Gerry. Tennis aid. 4,357,895, Cl. 116-225.000.

Nikonov, Nikolai I.: *See*—
Antonov, Evgeny A.; Matveev, Anatoly S.; Nikonov, Nikolai I.; Leonov, Boris N.; Razhev, Anatoly V.; and Prokofiev, Vyacheslav I., 4,357,816, Cl. 72-57.000.

Nimry, Tayseer S.; and Fields, Ellis K., to Standard Oil Company (Indiana). Polyimides from tetramethylcyclobutane-1,2,3,4,-tetracarboxylic dianhydride and diamines. 4,358,579, Cl. 528-188.000.

Nimry, Tayseer S.; and Fields, Ellis K., to Standard Oil Company (Indiana). Polyimides from tricyclo dodecane-3,6-diphenyl-1,8,4,5-tetracarboxylic acid dianhydride and tricyclo dodecane tetracarboxylic acid anhydride. 4,358,580, Cl. 528-188.000.

Nimry, Tayseer S.; and Fields, Ellis K., to Standard Oil Company (Indiana). Novel nonaromatic dianhydride and polyimides from tricyclo [4.2.1.0^{4,5}] nonane-3,4 dimethyl-3,4,7,8-tetracarboxylic acid dianhydride. 4,358,582, Cl. 528-353.000.

Nimry, Tayseer S.: *See*—
Paschke, Edward E.; Nimry, Tayseer S.; and Fields, Ellis K., 4,358,562, Cl. 524-600.000.

Nippon Electric Co., Ltd.: *See*—
Kurakami, Naoki; Takahashi, Tetsuya; and Suzuki, Etsuo, 4,358,794, Cl. 358-293.000.
Kurakami, Osamu; Koshimaru, Shigeru; and Yamanaka, Takashi, 4,357,747, Cl. 29-571.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Hirano, Hiroshi, 4,357,854, Cl. 84-1.030.

Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Yamaguchi, Hiroaki; and Ootsuka, Yoshinori, 4,357,919, Cl. 123-425.000.
Kohama, Tokio; Kawai, Hisasi; Obayashi, Hideki; and Egami, Tsuneyuki, 4,357,830, Cl. 73-204.000.
Tsuge, Noboru; Kuwakado, Satosi; Tanaka, Katsuyuki; and Shimogawa, Toshiaki, 4,358,135, Cl. 280-806.000.
Tsuge, Noboru; Kuwakado, Satosi; Shimogawa, Toshiaki; and Takei, Toshihiro, 4,358,136, Cl. 280-806.000.
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,357,825, Cl. 73-35.000.

Nippon Steel Corporation: *See*—
Kosuge, Yasuo; Yakabe, Masamori; Oga, Tadanori; and Maeda, Toru, 4,357,965, Cl. 140-2.000.
Yoshii, Masataka; Anabuki, Mitsugu; Kuwabara, Tatsuro; Obana, Yasuo; and Kono, Takuo, 4,358,313, Cl. 75-60.000.

Nippondenso Co., Ltd.: *See*—
Igashira, Toshihiko; Kawai, Hisasi; and Nomura, Ken, 4,357,927, Cl. 123-622.000.
Naganoma, Masanori; Kondo, Nobuo; Senda, Eiichi; Hibi, Hitoshi; Suzuki, Kunihiko; Ohta, Nobuyoshi; and Ito, Katsunori, 4,358,050, Cl. 236-13.000.

Nishijima, Hideo; Fukushima, Isao; and Yokota, Hajime, to Hitachi, Ltd. Electronic editing control apparatus for a video tape recorder. 4,358,797, Cl. 360-14.200.

Nishikawa, Masanori: *See*—
Ota, Akiho; Nishikawa, Masanori; Hattori, Masao; Tsuboi, Akio; Hama, Yoshihisa; Okudaira, Tadashi; and Sugihara, Shigeharu, 4,358,491, Cl. 428-35.000.

Nishikawa, Yoshiyasu; Harada, Chosei; and Nakano, Masao, to Kawasaki Jukogyo Kabushiki Kaisha. Single curvature fan wheel of a diagonal flow fan. 4,358,244, Cl. 416-186.00R.

Nishimura, Muneo: *See*—
Sato, Munekazu; Nishimura, Muneo; and Harada, Taichi, 4,358,813, Cl. 361-263.000.

Nishino, Yoshinori: *See*—
Yamamoto, Masahiko; Nishino, Yoshinori; Wada, Masao; and Ebisu, Tomio, 4,358,264, Cl. 425-425.000.

Nishizawa, Kazunori: *See*—
Ito, Osamu; Yamasaki, Harumasa; and Nishizawa, Kazunori, 4,357,938, Cl. 128-287.000.

Nissan Motor Company, Limited: *See*—
Aoyama, Shunichi, 4,357,917, Cl. 123-90.160.
Asano, Masaharu, 4,357,918, Cl. 123-425.000.
Hasegawa, Masami; Sakai, Utaro; and Naitoh, Takahisa, 4,358,380, Cl. 210-679.000.
Iizuka, Mitsuru; and Ishiyama, Yoshihiko, 4,358,149, Cl. 296-37.900.
Iwata, Hidefumi, 4,358,153, Cl. 296-213.000.
Senoo, Tetsuo; and Kogawa, Kouichi, 4,358,713, Cl. 315-291.000.
Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,357,924, Cl. 123-493.000.
Takegawa, Tetuo; Kikuchi, Yoichi; and Mizusawa, Akira, 4,358,234, Cl. 411-57.000.

Nissen, George P. Weight lifting machine. 4,358,107, Cl. 272-118.000.

Nitto Electric Industrial Co., Ltd.: *See*—
Iwama, Akio; Iwahori, Hiroshi; and Kazuse, Yoshitaka, 4,358,378, Cl. 210-500.200.

Nobel, Bruce, to Si Handling Systems, Inc. Driverless vehicle with proportional drive. 4,357,876, Cl. 104-166.000.

Nobel, Michael D.: *See*—
Phillips, John C.; and Nobel, Michael D., 4,357,888, Cl. 114-20.00R.

Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Two-stroke cycle gasoline engine. 4,357,916, Cl. 123-51.0BA.

Nolic I Borlange AB: *See*—
Jonsson, Gunnar, 4,358,140, Cl. 285-419.000.

Nomaguchi, Hirotsugu: *See*—
Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, 4,358,521, Cl. 430-83.000.

Nomura, Ken: *See*—
Igashira, Toshihiko; Kawai, Hisasi; and Nomura, Ken, 4,357,927, Cl. 123-622.000.

Nomura, Suguru: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akiro; Katayama, Shitomi; and Nomura, Suguru, 4,358,507, Cl. 428-429.000.

Noomen, Arie; Mostert, Johannes; and Wolters, Egbert, to Akzo N.V. Process of curing unsaturated epoxy coating composition with radiation and epoxy curing agent, and coated substrate. 4,358,477, Cl. 427-54.100.

Norca Corporation: *See*—
Fedele, Franco, 4,357,878, Cl. 105-159.000.

Norden, Alexander R., to GTE Laboratories Incorporated. Circuit breaker. 4,358,650, Cl. 200-153.00H.

Nordmark-Werke GmbH: *See*—
Scharwachter, Peter; Gutsche, Klaus; Kohlmann, Wilhelm; Hartleben, York; and Heberle, Wolfgang, 4,358,458, Cl. 424-273.00R.

Normanton, Adrain S., to British Steel Corporation. Metal refining process. 4,358,314, Cl. 75-60.000.

North American Philips Corporation: *See*—
Silva, Joseph A.; and Manchenko, Paul, 4,358,708, Cl. 315-58.000.

Norton, James H.: *See*—
Schmidt, Phillip A.; and Norton, James H., 4,358,144, Cl. 294-75.000.
Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., Jr., to FMC Corporation. Deoxygenating apparatus and method. 4,358,296, Cl. 55-38.000.
Nothnikz, Hans-Ulrich: *See*—
Schubert, Herrmann; Demus, Dietrich; Zaschke, Horst; Kuschel, Frank; Pelzl, Gerhard; Nothnikz, Hans-Ulrich; and Schliemann, Willibald, 4,358,589, Cl. 544-179.000.
Notoya, Yoshiaki, to Nifco Inc. Bundling fastener for bars and wires. 4,358,081, Cl. 248-73.000.
Nottingham, Lawrence D.; and Jugan, Michael R., to Westinghouse Electric Corp. Removable sleeve-to-shaft interlock for a dynamoelectric machine. 4,358,700, Cl. 310-262.000.
Novak, Peter: *See*—
Gasser, Hermann; Curiger, Karl; and Novak, Peter, 4,357,793, Cl. 57-304.000.
Nozawa, Nobuhiro, to Kabushika Kaisha Ohara Kogaku Garasu Seizosho. Fluoride glass. 4,358,543, Cl. 501-40.000.
Numata, Norio; and Yokoya, Satoshi, to Sony Corporation. Apparatus for receiving an AM stereophonic signal. 4,358,638, Cl. 179-1.0GS.
Nuttall, David A., to Kimberly-Clark Corporation. Papermaking headbox having rigid lips and actvating means. 4,358,342, Cl. 162-259.000.
Nyc, Wladimir. Wind powered generator. 4,358,687, Cl. 290-44.000.
Nygren, Robert: *See*—
Kleemann, Axel; Nygren, Robert; and Wagner, Rudolf, 4,358,615, Cl. 564-475.000.
Nyland, Roger L.: *See*—
Vander Molen, Donald R.; and Nyland, Roger L., 4,357,729, Cl. 15-319.000.
Nylander, John P. Photometric sensing module. 4,358,189, Cl. 354-81.000.
Obana, Yasuo: *See*—
Yoshii, Masataka; Anabuki, Mitsugu; Kuwabara, Tatsuro; Obana, Yasuo; and Kono, Takuo, 4,358,313, Cl. 75-60.000.
Obayashi, Hideki: *See*—
Kohama, Tokio; Kawai, Hisasi; Obayashi, Hideki; and Egami, Tsuneyuki, 4,357,830, Cl. 73-204.000.
O'Brien, Robert E.; and Krieger, Jeanne K., to New England Nuclear Corporation. Liquid emulsion scintillators which solidify for facile disposal. 4,358,401, Cl. 252-628.000.
O'Brien, Robert E.: *See*—
Tzodikov, Nathan R.; and O'Brien, Robert E., 4,358,434, Cl. 424-1.000.
Occidental Chemical Corporation: *See*—
Bommaraju, Tilak V.; and Viswanathan, Krishnan, 4,358,353, Cl. 204-98.000.
Occidental Petroleum Corporation: *See*—
Sass, Allan; McCarthy, Harry E.; Kaufman, Paul R.; and Finney, Clement S., 4,358,344, Cl. 201-4.000.
Wahl, Edward F., III; and Boucher, Frederic B., 4,357,802, Cl. 60-641.500.
Occidental Research Corporation: *See*—
Wahl, Edward F., III, 4,357,801, Cl. 60-641.300.
Oda, Isao; and Matsuhisa, Tadaaki, to NGK Insulators, Ltd. Thermal stress-resistant, rotary regenerator type ceramic heat exchanger and method for producing same. 4,357,987, Cl. 165-10.000.
Oeffinger, Thomas R.; Bailey, Robert F.; Kobayashi, Tsutomu; and Reekstin, John P., to Rockwell International Corporation. Method of fabrication of bubble domain device structures. 4,358,339, Cl. 156-643.000.
Officine Savio S.p.A.: *See*—
D'Agnolo, Armando; Colli, Luigi; and Gaiotti, Ugo, 4,357,792, Cl. 57-279.000.
Oga, Tadanori: *See*—
Kosuge, Yasuo; Yakabe, Masamori; Oga, Tadanori; and Maeda, Toru, 4,357,965, Cl. 140-2.000.
Ohara, Naoyuki: *See*—
Shimizu, Ryota; Sasaki, Toshiharu; and Ohara, Naoyuki, 4,358,800, Cl. 360-90.000.
Ohki, Masahiko, to Sumitomo Rubber Industries, Ltd. Multi-extrusion die assembly for thermoplastic materials. 4,358,261, Cl. 425-131.100.
Ohki, Nobutaka: *See*—
Sasaki, Noboru; Sera, Hidefumi; Ohki, Nobutaka; and Yamaguchi, Jun, 4,358,534, Cl. 430-537.000.
Ohmann, William: *See*—
Braga, Albert T.; and Ohmann, William, 4,357,812, Cl. 68-18.00D.
Ohno, Akiro: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akiro; Katayama, Shitomi; and Nomura, Suguru, 4,358,507, Cl. 428-429.000.
Ohta, Nobuyoshi: *See*—
Naganoma, Masanori; Kondo, Nobuo; Senda, Eiichi; Hibi, Hitoshi; Suzuki, Kunihiko; Ohta, Nobuyoshi; and Ito, Katsunori, 4,358,050, Cl. 236-13.000.
Ohtsuki, Akira; Ishino, Hirokichi; and Sakai, Hiromu, to Toyo Ink Manufacturing Co., Ltd. Cans. 4,358,493, Cl. 428-35.000.
Ohya, Takeji; and Maeda, Tatuo, to Toyo Kogyo Co., Ltd. Rear side door structure for four-door type automobiles. 4,357,781, Cl. 49-227.000.
Okada, Masanori: *See*—
Takematsu, Tetsuo; Takeuchi, Masaki; Okada, Masanori; Sugiyama, Hiroshi; and Murakami, Yasushi, 4,358,309, Cl. 71-120.000.
Okada, Yoshikuni: *See*—
Tamura, Koichiro; Tajima, Hiroaki; Okada, Yoshikuni; and Umeyama, Shinji, 4,358,858, Cl. 455-607.000.
Okamoto, Haruo; and Yamada, Motoyuki, to Shin-Etsu Chemical Co., Ltd. Method for molding a fused quartz glass block. 4,358,306, Cl. 65-32.000.
Okamura, Kiyohito: *See*—
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Fukuda, Kazushige, 4,358,576, Cl. 528-30.000.
Okamura, Masatoshi; and Tanaka, Kimio, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,358,070, Cl. 242-197.000.
Okamura, Masatoshi, to TDK Electronics Co., Ltd. Cassette case. 4,358,071, Cl. 242-199.000.
Okano, Hiroshi; and Yamazaki, Masami, to Toyota Jidosha Kogyo Kabushiki Kaisha. Turbocharger for use in an internal combustion engine. 4,358,253, Cl. 417-407.000.
Okudaira, Tadashi: *See*—
Ota, Akiho; Nishikawa, Masanori; Hattori, Masao; Tsuboi, Akio; Hama, Yoshihisa; Okudaira, Tadashi; and Sugihara, Shigeharu, 4,358,491, Cl. 428-35.000.
Okumura, Yoshiharu; Sakakibara, Tadamori; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of secondary alcohols. 4,358,626, Cl. 568-899.000.
Olds, Howard F., to Mobius Communication, Inc. Optical filter device. 4,357,771, Cl. 40-444.000.
Olefirenko, Vladimir N.: *See*—
Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N., 4,357,967, Cl. 140-92.100.
Olekna, David J.: *See*—
Graham, Henry A., Jr.; Olekna, David J.; Hawk, Johnna B.; and Kebles, Diane B., 4,358,436, Cl. 424-11.000.
Olin Corporation: *See*—
Ollivier, Jean, 4,358,041, Cl. 227-10.000.
Yarwood, John C.; Pryor, Michael J.; and Tyler, Derek E., 4,358,416, Cl. 264-22.000.
Ollendick, Gary B., to Teletype Corporation. Digital voltage comparator. 4,358,690, Cl. 307-359.000.
Ollivier, Jean, to Olin Corporation. Powder-actuated tool with power adjustment and angle-fire control. 4,358,041, Cl. 227-10.000.
Olson, David H.: *See*—
Haag, Werner O.; Olson, David H.; and Rodewald, Paul G., 4,358,395, Cl. 252-411.00R.
Olson, John T.; and Westergaard, Robert K., to King-Seeley Thermos Co. Ice making machine. 4,357,808, Cl. 62-347.000.
Olympus Optical Co., Ltd.: *See*—
Kondo, Isao; and Nakajima, Yukio, 4,358,187, Cl. 354-33.000.
Osanai, Akira; and Nakao, Toshihisa, 4,358,807, Cl. 360-130.320.
O'Neill, Edward G.: *See*—
Dutcher, Robert G.; and O'Neill, Edward G., 4,357,946, Cl. 128-785.000.
Ono, Kenichi; Otawa, Shuji; and Shida, Masaharu, to Kabushiki Kaisha Daini Seikosha. Analogue alarm electronic timepiece. 4,358,840, Cl. 368-251.000.
Ono, Shigetoshi: *See*—
Fujita, Shinsaku; Itoh, Isamu; Ono, Shigetoshi; Harada, Tooru; and Yoshida, Yoshinobu, 4,358,526, Cl. 430-223.000.
Onodera, Kiyoshi: *See*—
Yamada, Kikuo; and Onodera, Kiyoshi, 4,357,982, Cl. 160-188.000.
Ootsuka, Yoshinori: *See*—
Hattori, Tadashi; Yamaguchi, Hiroaki; and Ootsuka, Yoshinori, 4,357,919, Cl. 123-425.000.
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,357,825, Cl. 73-35.000.
Opalko, Albert, to John Wyeth & Brother Limited. N-[1,2,3,4,6,7,12,12 α-octahydro-2H-indolo(2,3α)-quinolizinyl-2β-yl]alkane and benzyl sulfonamides and anti-hypertensive use thereof. 4,358,452, Cl. 424-256.000.
Oprandi, Pierre; and Romeas, Rene, to Thomson-Brandt. Digital process for controlling the correct reproduction of a composite television signal and a device for implementing said process. 4,358,787, Cl. 358-14.000.
Optical Coating Laboratory, Inc.: *See*—
Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., 4,358,472, Cl. 427-10.000.
Optical Information Systems, Inc.: *See*—
Childs, Richard B.; and Zory, Peter S., Jr., 4,358,676, Cl. 250-211.00J.
Oransky, John J.: *See*—
Papinsick, John; Oransky, John J.; and Sircar, Shivaji, 4,358,111, Cl. 273-61.00R.
Orme, Gordon: *See*—
Kuehnle, Manfred R.; Orme, Gordon; and Brophy, Joseph L., 4,358,195, Cl. 355-4.000.
Ortho Diagnostics, Inc.: *See*—
Graham, Henry A., Jr.; Olekna, David J.; Hawk, Johnna B.; and Kebles, Diane B., 4,358,436, Cl. 424-11.000.
Osanai, Akira; and Nakao, Toshihisa, to Olympus Optical Company Limited. Tape cassette. 4,358,807, Cl. 360-130.320.
Osterhold, Wolfgang; and Klueting, Bernd A., to Keiper U.S.A., Inc. Limited spring and inertia latch system. 4,358,155, Cl. 297-379.000.
Ostman, Barry L., to Advanced Circuit Technology Inc. Jumper cable. 4,357,750, Cl. 29-847.000.
Ota, Akiho; Nishikawa, Masanori; Hattori, Masao; Tsuboi, Akio; Hama, Yoshihisa; Okudaira, Tadashi; and Sugihara, Shigeharu, to Toyo

Boseki Kabushiki Kaisha; and Yoshino Kogyosho Co., Ltd. Process for producing a hollow vessel having a frosted glass-like surface. 4,358,491, Cl. 428-35.000.

Otawa, Shuji: *See*—
Ono, Kenichi; Otawa, Shuji; and Shida, Masaharu, 4,358,840, Cl. 368-251.000.

Otis Elevator Company: *See*—
Gibson, George W.; Mahon, Joseph P.; McAulay, John; and Wolper, Stanley M., 4,357,998, Cl. 187-49.000.

Ouchi, Koji: *See*—
Tada, Masahiro; Ichikawa, Hirokazu; Fukushima, Mitsuo; Nakamichi, Koya; Ouchi, Koji; and Ishigaki, Yoshio, 4,358,769, Cl. 343-742.000.

Outboard Marine Corporation: *See*—
Brown, Peter W., 4,357,912, Cl. 123-41.080.

Ouzeau, Jean F.: *See*—
Chaix, Jean E.; Fajeau, Maurice; and Ouzeau, Jean F., 4,358,301, Cl. 55-318.000.

Owen, William G. S., to IMI Santon Limited. Thermal cut-out arrangement for an electric water heater. 4,358,665, Cl. 219-306.000.

Owens-Corning Fiberglas Corporation: *See*—
Dunbar, Sidney G., 4,358,502, Cl. 428-283.000.
Froberg, Magnus L., 4,358,304, Cl. 65-27.000.
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,358,320, Cl. 106-282.000.

Owens-Illinois, Inc.: *See*—
Amberg, Stephen W., 4,357,788, Cl. 53-585.000.
Lohrman, Richard D., 4,358,031, Cl. 222-153.000.

Ozeki Sake Brewing Co., Ltd.: *See*—
Takeda, Masahisa, 4,358,462, Cl. 426-13.000.

Pabodie, Robert M., to Monarch Marking Systems, Inc. Print wheel and method of making same. 4,357,868, Cl. 101-110.000.

Paccar Inc.: *See*—
Magnuson, Roland A., 4,357,857, Cl. 89-156.000.

PACCAR of Canada Ltd.: *See*—
House, Lawrence A.; Kumpa, Vladimir; and Magnuson, John E., 4,358,088, Cl. 254-349.000.

Padget, John C., to Imperial Chemical Industries Limited. Chlorinated polymers. 4,358,402, Cl. 525-192.000.

Paggini, Alberto; Romano, Ugo; Furlone, Donato; and Sanfilippo, Domenico, to Snamprogetti, S.p.A. Method for the production of high-purity ethylene glycols. 4,358,625, Cl. 568-867.000.

Palmer, Charles L.: *See*—
Palmer, Denis L.; Palmer, Robert A., Jr.; and Palmer, Robert A., Sr., 4,358,693, Cl. 310-46.000.

Palmer, Denis L.; Palmer, Robert A., Jr.; and Palmer, Robert A., Sr., to Palmer, Charles L.; Palmer, Douglas L.; Palmer, Stanley B.; Staker, Lynn L.; and Cline, Keith W. Permanent magnet motor. 4,358,693, Cl. 310-46.000.

Palmer, Douglas L.: *See*—
Palmer, Denis L.; Palmer, Robert A., Jr.; and Palmer, Robert A., Sr., 4,358,693, Cl. 310-46.000.

Palmer, James. Portable fire alarm apparatus. 4,358,760, Cl. 340-586.000.

Palmer, Robert A., Jr.: *See*—
Palmer, Denis L.; Palmer, Robert A., Jr.; and Palmer, Robert A., Sr., 4,358,693, Cl. 310-46.000.

Palmer, Robert A., Sr.: *See*—
Palmer, Denis L.; Palmer, Robert A., Jr.; and Palmer, Robert A., Sr., 4,358,693, Cl. 310-46.000.

Palmer, Stanley B.: *See*—
Palmer, Denis L.; Palmer, Robert A., Jr.; and Palmer, Robert A., Sr., 4,358,693, Cl. 310-46.000.

Paparizos, Christos: *See*—
Pedersen, S. Erik; Wagner, Louis F.; and Paparizos, Christos, 4,358,610, Cl. 562-535.000.

Papinsick, John; Oransky, John J.; and Sircar, Shivaji, to Air Products and Chemicals, Inc. Pressurized, non-refillable recreation ball inflated with sulfur hexafluoride. 4,358,111, Cl. 273-61.00R.

Paraghamian, Aram C.; and Long, Glen F., to Reaction Corporation. Electronic reaction training apparatus. 4,358,275, Cl. 434-258.000.

Paramount Health Equipment Corporation: *See*—
Voris, Harvey C., 4,358,108, Cl. 272-118.000.

Parker, Robert F. Drywall patch kit. 4,358,495, Cl. 428-66.000.

Parks, Dale B.: *See*—
Fagen, Ben W., Jr.; and Parks, Dale B., 4,357,901, Cl. 118-689.000.

Parks, George W., Jr. Settable orifice. 4,357,863, Cl. 99-483.000.

Paschke, Edward E.; Nimry, Tayseer S.; and Fields, Ellis K., to Standard Oil Company (Indiana). Copolyimides from tetramethylcyclobutane-1,2,3,4-tetracarboxylic dianhydride and a mixture of diamines. 4,358,562, Cl. 524-600.000.

Pashkov, Alexandr N.: *See*—
Feldshtein, Isaak Y.; Epifanov, Valery S.; Olefirenko, Vladimir N.; Karelov, Jury I.; Boyarsky, Alexandr A.; and Pashkov, Alexandr N., 4,357,967, Cl. 140-92.100.

Pass and Seymour, Inc.: *See*—
Navarro, John N., 4,358,079, Cl. 248-56.000.

Patel, Arvind M., to International Business Machines Corporation. Dual function ECC system with block check byte. 4,358,848, Cl. 371-39.000.

Patel, Chandra K. N. Method for shelling of nuts with a laser beam. 4,358,467, Cl. 426-237.000.

Patel, Hiralal V., to Dana Corporation. Crimping collet. 4,357,822, Cl. 72-402.000.

Patel, Raman: *See*—
Coran, Aubert Y.; and Patel, Raman, 4,358,553, Cl. 524-37.000.

Paton, H. Neil; Skilling, John B.; Sandys, Jeffrey P.; and Gylland, E. Frederick, Jr. Vehicle suspension system. 4,358,096, Cl. 267-9.00C.

Paton, Neil E.: *See*—
Mahoney, Murray W.; Hamilton, C. Howard; and Paton, Neil E., 4,358,324, Cl. 148-12.70A.

Patterson, Donald E., to Sterling Drug Inc. Apparatus for slurrying powdered solids. 4,357,953, Cl. 137-88.000.

Paymal, Andre, to Saint-Gobain Industries. Absorber for a solar collector. 4,357,933, Cl. 126-449.000.

Payne, Barrett M. M. Apparatus for harnessing and storage of wind energy. 4,358,250, Cl. 417-302.000.

Peabody ABC Corporation: *See*—
Hoy, Robert W., 4,358,139, Cl. 285-332.300.

Pearson, Walter C., to Minnesota Mining and Manufacturing Company. Tape-cutting blade attaching method. 4,358,328, Cl. 156-73.100.

Peck, Marvin H.; DeSmit, Larry M.; Conlon, John D.; and Bynum, Frank O., to Peck-O-Matic, Inc. Tong apparatus for threadedly connecting and disconnecting elongated members. 4,357,843, Cl. 81-57.160.

Peck-O-Matic, Inc.: *See*—
Peck, Marvin H.; DeSmit, Larry M.; Conlon, John D.; and Bynum, Frank O., 4,357,843, Cl. 81-57.160.

Pedersen, S. Erik; Wagner, Louis F.; and Paparizos, Christos, to Standard Oil Company, The. Process for the production of methacrylic acid from isobutyraldehyde. 4,358,610, Cl. 562-535.000.

Pelley, Paul W.: *See*—
Amick, Edward W.; and Pelley, Paul W., 4,357,772, Cl. 40-605.000.

Pelzl, Gerhard: *See*—
Schubert, Herrmann; Demus, Dietrich; Zaschke, Horst; Kuschel, Frank; Pelzl, Gerhard; Nothnikz, Hans-Ulrich; and Schliemann, Willibald, 4,358,589, Cl. 544-179.000.

Pere, Gerard, to Creusot-Loire. Apparatus for the electrolysis of water. 4,358,357, Cl. 204-256.000.

Perini, Giuseppe. Seismic movement detector responsive in both vertical and horizontal planes. 4,358,757, Cl. 340-540.000.

Perkins, William G.; and Schriver, Clem B., to Goodyear Tire & Rubber Company, The. Novel process for deep stretch forming of polyesters. 4,358,492, Cl. 428-35.000.

Perrone, Ettore; Nannini, Giuliano; Alpegiani, Marco; Giudici, Franco; and Meinardi, Giuseppe, to Farmitalia Carlo Erba S.p.A. N-substituted thiazolyl derivatives of oxy-imino-substituted cephalosporins useful as anti-bacterial agents. 4,358,448, Cl. 424-246.000.

Persons, Garry R.: *See*—
Frantzich, William P.; and Persons, Garry R., 4,357,935, Cl. 128-156.000.

Peter, Emil. Domed support framework or truss. 4,357,782, Cl. 52-18.000.

Peter, Gunter: *See*—
Rudolph, Otfried; Peter, Gunter; and Fischer, Karlheinz, 4,357,870, Cl. 101-246.000.

Peterpaul, Joseph, to Thomas & Betts Corporation. Tie discharge apparatus in a bundling tie applying tool. 4,357,969, Cl. 140-123.600.

Peters, Alan W., to Mobil Oil Corporation. Demetalation and desulfurization of oil. 4,358,361, Cl. 208-89.000.

Peterson, Andrew A.: *See*—
Fischer, Charles P.; Peterson, Andrew A.; Doi, Edward J.; Gossoo, Rodney W.; and Mitrzyk, Jan C., Sr., 4,357,742, Cl. 29-33.00M.

Peterson, Carl R.: *See*—
Kissell, Fred N.; Muldoon, Terry L.; Schroeder, William E., Jr.; and Peterson, Carl R., 4,358,160, Cl. 299-43.000.

Peterson, Gary M.; and Smiltneek, Andrew J., to Marathon Electric Corporation. Rotor construction for dynamoelectric machines apparatus. 4,358,698, Cl. 310-187.000.

Petrolite Corporation: *See*—
Quinlan, Patrick M., 4,358,382, Cl. 210-736.000.

Petz, Gunter. Rotary switch. 4,358,649, Cl. 200-153.00L.

Peyron, Georges: *See*—
Coulombeau, Alain; and Peyron, Georges, 4,358,390, Cl. 252-182.100.

Pfleiderer, Hans-Joerg; Stein, Karl-Ulrich; Koubek, Michael; and Christiansen, Hans-Martin, to Siemens Aktiengesellschaft. Method and a circuit arrangement for the storage of video signals. 4,358,786, Cl. 358-310.000.

Phan, Trung H.: *See*—
Cognard, Jacques; and Phan, Trung H., 4,358,392, Cl. 252-299.100.

Philip Morris Incorporated: *See*—
Steinbrecher, Donald H., 4,358,731, Cl. 324-58.50R.

Phillips, John C.; and Nobel, Michael D. Projectile for underwater firearm. 4,357,888, Cl. 114-20.00R.

Phillips Petroleum Company: *See*—
Austin, Oliver K., 4,358,289, Cl. 23-314.000.
Kokesh, Fritz C., 4,357,836, Cl. 73-863.110.

Pichl, Hans: *See*—
Ernst, Bernhard; Schmengler, Eckhard; and Pichl, Hans, 4,358,768, Cl. 343-118.000.

Pierce, Charles F. E.; Waldock, George R.; and Woolford, Noel J., to Lucas Industries Limited. Method and apparatus for winding conductor coils on radially extending parts of a workpiece. 4,358,063, Cl. 242-7.030.

Pierce Chemical Company: *See*—
Ghosh, Peter; Ternai, Bela; and Whitehouse, M. W., 4,358,595, Cl. 548-126.000.

Pierrat, Michel A. Log splitter with counter-balanced wedge assembly. 4,357,973, Cl. 144-193.00A.

Pietsch, Erich: *See*—
Simeth, Claus; and Pietsch, Erich, 4,357,872, Cl. 101-350.000.

Pilgram, Kurt H. G., to Shell Oil Company. Preparation of 2-phenylsemicarbazides. 4,358,611, Cl. 564-34.000.

Piot, Michel: *See—*
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,358,465, Cl. 426-42.000.

Pipkin, David J.: *See—*
Jones, Dennis P.; and Pipkin, David J., 4,357,899, Cl. 118-665.000.

Pirani, Giancarlo, to Cselt, Centro Studi E Laboratori Telecomunicazioni S.p.A. Method of and means for spread-spectrum transmission. 4,358,844, Cl. 370-18.000.

Pircon, Ladislav J. Heterogeneous process. 4,358,433, Cl. 423-659.000.

Pittavino, Marc P. L.: *See—*
Morel, Pierre A. A. A.; and Pittavino, Marc P. L., 4,358,756, Cl. 340-539.000.

Piwonka, Fridolin: *See—*
Stumpp, Gerhard; Wessel, Wolf; Flaig, Ulrich; Piwonka, Fridolin; and Walz, Ludwig, 4,357,920, Cl. 123-446.000.

Plapp, Gary R. Electronic game using a player's physiological responses. 4,358,118, Cl. 273-85.00G.

Plastiglide Manufacturing Corporation: *See—*
Neville, Donald, 4,357,733, Cl. 16-107.000.

Pleickhardt, George C.; and Belisle, Philip R., to Illinois Tool Works Inc. Resilient retaining clip. 4,358,216, Cl. 403-387.000.

Pleva, Harry: *See—*
Bahner, Friedrich; and Pleva, Harry, 4,358,208, Cl. 374-41.000.

Poehler, Hermann, to MAP Mikrofilm Apparatebau Dr. Poehler GmbH & Co. KG. Control panel for a microfiche reader. 4,357,770, Cl. 40-361.000.

Poitras, Edward J. Liquid dispenser apparatus. 4,358,027, Cl. 222-43.000.

Polaroid Corporation: *See—*
Johnson, Bruce K.; and Millard, John B., 4,358,186, Cl. 354-27.000.

Polynovus Industries, Inc.: *See—*
Rodish, John, 4,357,789, Cl. 56-295.000.
Rodish, John, 4,358,332, Cl. 156-356.000.

Pompei, Arturo: *See—*
Hayes, Robert B.; and Pompei, Arturo, 4,358,182, Cl. 350-287.000.

Ponchiroli, Osvaldo: *See—*
Murmann, Walter; and Ponchiroli, Osvaldo, 4,358,441, Cl. 424-180.000.

Pont, Richard S.; and Gray, John, to Laidlaw Drew & Co. Ltd. Fluid fuel burner with automatic fuel shut-off valve. 4,358,266, Cl. 431-90.000.

Popp, Franz: *See—*
Leibhard, Erich; and Popp, Franz, 4,358,030, Cl. 222-146.00H.

Porcelli, Richard V.; and Bhise, Vijay S., to Halcon SD Group, Inc., The. Preparation of carbonylation products. 4,358,411, Cl. 260-546.000.

Portz, Willi: *See—*
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,358,312, Cl. 75-58.000.

Posthumus, Harry G.: *See—*
Gleason, Joseph P.; and Posthumus, Harry G., 4,358,857, Cl. 455-26.000.

Potucek, Frank R., to Duo-Fast Corporation. Fastener strip. 4,358,014, Cl. 206-347.000.

Powers, Kenneth W.; and Schatz, Ralph H., to Exxon Research & Engineering Co. Stabilized slurries of isoolefin polymers. 4,358,560, Cl. 524-468.000.

PPG Industries, Inc.: *See—*
Sleighter, George E., 4,358,305, Cl. 65-29.000.
Temple, Chester, 4,358,501, Cl. 428-268.000.

Praeg, Walter F., to United States of America, Energy. High energy overcurrent protective device. 4,358,808, Cl. 361-11.000.

Pravettone, John P. Dust pan and refuse container. 4,357,728, Cl. 15-257.400.

Prescolite: *See—*
Druffel, James B., 4,358,635, Cl. 174-101.000.

Preston, Donald; and Yeaton, Robert G., to United Technologies Corporation. Pressure sensor. 4,357,859, Cl. 92-41.000.

Price, Anthony G.; and Anderson, Robert A., to Lucas Industries, Limited. Spreading disc brakes for vehicles. 4,358,002, Cl. 188-71.900.

Priegnitz, James W.: *See—*
Neuzil, Richard W.; and Priegnitz, James W., 4,358,322, Cl. 127-46.200.

Priesnitz, Uwe: *See—*
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,358,409, Cl. 260-465.00G.

Primo, Luigi, to Ansaldo Societa per Azioni. Reamer for hollow shafts. 4,357,846, Cl. 82-1.500.

Probst, Manfred: *See—*
Wirtz-Peitz, Ferdinand; Probst, Manfred; and Winkelmann, Johannes, 4,358,442, Cl. 424-199.000.

Process Engineering Company SA: *See—*
Aeschbach, Hermann A., 4,358,463, Cl. 426-17.000.

Prokofiev, Vyacheslav I.: *See—*
Antonov, Evgeny A.; Matveev, Anatoly S.; Nikonov, Nikolai I.; Leonov, Boris N.; Razhev, Anatoly V.; and Prokofiev, Vyacheslav I., 4,357,816, Cl. 72-57.000.

Propylox (Societe Anonyme): *See—*
Hardy, Nicolas, 4,358,609, Cl. 562-606.000.

Proud, Joseph M.; Auborn, James J.; and Bessett, Richard A., to GTE Laboratories Incorporated. High voltage control devices. 4,358,641, Cl. 179-113.000.

Pryor, Michael J.: *See—*
Yarwood, John C.; Pryor, Michael J.; and Tyler, Derek E., 4,358,416, Cl. 264-22.000.

Puffer, Leroy G.; and Waters, James P., to Essex Group, Inc. Apparatus and method for monitoring the surface character of circular objects. 4,358,202, Cl. 356-430.000.

Puhl, Earl M. Sports implement handle-holding attachment for prosthesis. 4,357,717, Cl. 3-12.800.

Pulawski, Casimir: *See—*
Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., Jr., 4,358,296, Cl. 55-38.000.

Quadro, Giuseppe, to Dr. L. Zambeletti S.p.A. 2,4-Dioxacyclohexanone derivative. 4,358,444, Cl. 424-230.000.

Queens University of Belfast, The: *See—*
Stewart, James A. C.; Armstrong, Brian M.; Gamble, Harold S.; Mallon, John; Monds, Fabian C.; Ryan, William D.; and Wakefield, James, 4,358,759, Cl. 340-554.000.

Quick, Thomas E. Pollution emission control and fuel saving device for internal combustion engines. 4,357,926, Cl. 123-545.000.

Quietlite International, Ltd.: *See—*
Elliott, William J., 4,358,717, Cl. 315-308.000.

Quinlan, Patrick M., to Petrolite Corporation. Use of quaternized derivatives of polymerized pyridines and quinolines as water clarifiers. 4,358,382, Cl. 210-736.000.

Quinn, Clayton B.; and Hilakos, William, to General Electric Company. Polycarbonate composition. 4,358,563, Cl. 525-146.000.

Quinn, Clayton B.; and Rosenquist, Niles R., to General Electric Company. Blends of copolyester-carbonate with polysulfone. 4,358,569, Cl. 525-439.000.

Qureshi, Shahid U. H., to Codex Corporation. Digital modem transmitter. 4,358,853, Cl. 375-60.000.

R. S. Weber, Inc.: *See—*
Weber, Russell S.; Miller, Thomas H.; and von den Stemmen, Alfons, 4,358,424, Cl. 422-68.000.

Rager, Edgar A. Spindle for centering a data disk. 4,358,843, Cl. 369-261.000.

Rakow, Donald G., to International Harvester Company. Rotating debris screen for alternator. 4,358,303, Cl. 55-408.000.

Randklev, Ronald M., to Minnesota Mining and Manufacturing Company. Dental filling composition utilizing zinc-containing inorganic filler. 4,358,549, Cl. 523-117.000.

Rapp, Clifton. Venetian blind. 4,357,980, Cl. 160-168.00R.

Rasmussen, Soren W., to LKB-Produkter AB. Process and apparatus for the treatment of samples with a succession of liquids. 4,358,470, Cl. 427-4.000.

Rast, Henry J., Jr., to Rast, Henry J., Jr. Plant protection system. 4,357,884, Cl. 111-2.000.

Ratcliff, Elmer G. Motorized gas trap. 4,358,298, Cl. 55-185.000.

Raubenheimer, Wallace O., to Jefferson Smurfit Incorporated. Carton divider. 4,358,047, Cl. 229-15.000.

Ravinski, Paul P.: *See—*
Adams, James A.; and Ravinski, Paul P., 4,357,842, Cl. 76-41.000.

Ray-O-Vac Corporation: *See—*
Joshi, Ashok V.; Jatkar, Arun D.; and Sholette, William P., 4,358,515, Cl. 429-191.000.

Raymond, A.: *See—*
Wolker, Gunter, 4,358,080, Cl. 248-68.00R.

Raytheon Company: *See—*
Weiss, Bernard J., 4,358,653, Cl. 219-10.55B.

Razhev, Anatoly V.: *See—*
Antonov, Evgeny A.; Matveev, Anatoly S.; Nikonov, Nikolai I.; Leonov, Boris N.; Razhev, Anatoly V.; and Prokofiev, Vyacheslav I., 4,357,816, Cl. 72-57.000.

RCA Corporation: *See—*
Burrowes, Sherwin D., 4,358,788, Cl. 358-22.000.
Carroll, Charles B.; and Baker, Alfred L., 4,358,841, Cl. 369-77.000.
Dinter, Konrad M., 4,358,740, Cl. 331-1.00A.
French, Michael P., 4,358,791, Cl. 358-193.100.
Hedlund, Lee V.; and Mathys, Richard E., Sr., 4,358,798, Cl. 360-73.000.
Wallace, Lloyd F., 4,358,323, Cl. 148-1.500.

Reaction Corporation: *See—*
Paraghamian, Aram C.; and Long, Glen F., 4,358,275, Cl. 434-258.000.

Read, Frank H., to Kratos Limited. Charged particle spectrometers. 4,358,680, Cl. 250-305.000.

Reade, Clara M., administratrix: *See—*
Andrus, Ronald L.; Chyung, Kenneth; Reade, Richard F., deceased; and Reade, Clara M., administratrix, 4,358,541, Cl. 501-5.000.

Reade, Richard F., deceased: *See—*
Andrus, Ronald L.; Chyung, Kenneth; Reade, Richard F., deceased; and Reade, Clara M., administratrix, 4,358,541, Cl. 501-5.000.

Rebmann, Wolfgang: *See—*
Rosenzopf, Gunter; Schnurle, Hans; Rebmann, Wolfgang; and Drews, Ulrich, 4,357,922, Cl. 123-489.000.

Reczek, James A.: *See—*
Chapman, Derek D.; and Reczek, James A., 4,358,404, Cl. 260-156.000.

Redland Automation Limited: *See—*
Clark, Michael A. G., 4,358,749, Cl. 340-38.00L.

Redlich, Rudolf: *See—*
Goedde, Franz; Redlich, Rudolf; and Riecker, Johann, 4,358,343, Cl. 201-1.000.

Reed, Russell, Jr.; Lee, Benjamin Y. S.; and Henry, Ronald A., to United States of America, Navy. Gas generant propellants. 4,358,327, Cl. 149-19.400.

Reekstin, John P.: *See—*
Oeffinger, Thomas R.; Bailey, Robert F.; Kobayashi, Tsutomu; and Reekstin, John P., 4,358,339, Cl. 156-643.000.

Reetz, Tustin C.: *See—*
Koslosky, Howard E.; and Reetz, Tustin C., 4,358,815, Cl. 361-355.000.

Reeves, James. Shock absorbent support for an elongate member. 4,358,082, Cl. 248-75.000.

Reeves, Larry E.: *See—*
Dunklin, Hubbard L.; and Reeves, Larry E., 4,358,488, Cl. 428-31.000.

Reeves, Larry Eugene: *See—*
Dunklin, Hubbard L.; and Reeves, Larry E., 4,358,488, Cl. 428-31.000.

Regan, John; and Watkins, Bruce J., to Hughes Tool Company. Keying means for segmented end ring blowout preventer. 4,358,085, Cl. 251-1.00B.

Rehage, Gunther: *See—*
Finkelmann, Heino; Rehage, Gunther; and Kollmann, Georg, 4,358,391, Cl. 252-299.010.

Reid, David L.; Taylor, Dennis O.; and Brott, Donald J., to Cummins Engine Company, Inc. Engine speed measuring system. 4,358,828, Cl. 364-565.000.

Reid, Gilbert R., to Burroughs Corporation. Connector for pin type integrated circuit packages. 4,358,175, Cl. 339-75.00M.

Reinert, Gerhard, to Singer Company, The. Fabric repairing assembly. 4,358,335, Cl. 156-514.000.

Reinke Manufacturing Company, Inc.: *See—*
Reinke, Richard F., 4,358,055, Cl. 239-183.000.

Reinke, Richard F., to Reinke Manufacturing Company, Inc. Guidance system for lateral move irrigation machines. 4,358,055, Cl. 239-183.000.

Renes, Hendrik: *See—*
Heemskerk, Jacobus P. J.; Renes, Hendrik; and Simons, Carel A. J., 4,358,200, Cl. 356-123.000.

Repass, James T.: *See—*
Glickman, David; Repass, James T.; Rosenbaum, Walter S.; and Russell, Janet G., 4,358,824, Cl. 364-200.000.

Research Foundation of State University of New York, The: *See—*
Coburn, Robert A.; Evans, Richard T.; Genco, Robert J.; and Batista, Armando, 4,358,443, Cl. 424-230.000.
Slaunwhite, Wilson R., Jr., 4,358,435, Cl. 424-1.000.

Reynolds, James W., Jr. Electrical bus bar assembly and method of manufacture. 4,358,633, Cl. 174-72.00B.

Rhoda, Richard N., to MPD Technology Corporation. Electrodeposition of platinum from a cis-diamminedihaloplatinum (II) electrolyte. 4,358,352, Cl. 204-47.000.

Rhodes, Percy H., to United States of America, National Aeronautics and Space Administration. Static continuous electrophoresis device. 4,358,358, Cl. 204-299.00R.

Rhone Poulenc Industries: *See—*
Daniel, Jean-Claude; Schuppiser, Jean-Luc; and Tricot, Marc, deceased, 4,358,388, Cl. 252-62.540.

Rhythm Watch Company Limited: *See—*
Nakamura, Norihiko, 4,358,838, Cl. 368-75.000.

Ribout, Pierre: *See—*
Nazet, Rene; and Ribout, Pierre, 4,358,706, Cl. 315-5.380.

Richards, David O.: *See—*
Jameson, Dennis E.; and Richards, David O., 4,358,370, Cl. 210-415.000.
Jameson, Dennis E.; and Richards, David O., 4,358,371, Cl. 210-415.000.

Richards, Dean E. Attachment for a ground traversing device and/or a ground traversing device. 4,358,123, Cl. 280-47.13R.

Richardson, James M.; and Rubino, James, to Burroughs Corporation. Document sorter apparatus. 4,358,016, Cl. 209-564.000.

Richter, Ferdinand, to British Petroleum Company Limited. Dewaxing process. 4,358,360, Cl. 208-33.000.

Richter, Karl, to Eisenwerke Fried. Wilh. Duker GmbH & Co. Meat grinder. 4,358,061, Cl. 241-82.400.

Richter, Mark A., to United Technologies Corporation. Metal-composite bonding. 4,358,512, Cl. 428-630.000.

Ricoh Company, Ltd.: *See—*
Isago, Koki, 4,358,199, Cl. 355-70.000.
Jinnai, Koichiro, 4,358,775, Cl. 346-75.000.

Ricoh Watch Co., Ltd.: *See—*
Tohyama, Nobuo; Yoshida, Junichi; Yamano, Shozo; and Kamiya, Kenji, 4,358,836, Cl. 368-47.000.

Riebel, Hans-Jochem: *See—*
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,358,409, Cl. 260-465.00G.

Riecker, Johann: *See—*
Goedde, Franz; Redlich, Rudolf; and Riecker, Johann, 4,358,343, Cl. 201-1.000.

Rieter Machine Works, Ltd.: *See—*
Schwander, Andreas; and Thalmann, Dieter, 4,358,065, Cl. 242-18.0PW.
Weiss, Hans-Joachim, 4,358,068, Cl. 242-131.000.

Rightmire, Robert A.: *See—*
Alford, Harvey E.; and Rightmire, Robert A., 4,358,366, Cl. 208-112.000.

Rigotti, James M., to International Business Machines Corporation. Print ribbon driving mechanism. 4,358,209, Cl. 400-219.200.

Rink, Hans: *See—*
Sieber, Peter; Kamber, Bruno; and Rink, Hans, 4,358,439, Cl. 424-177.000.

Rivenburgh, Dennis L.: *See—*
Ameen, Joseph G.; Joseph, Charles A.; Rivenburgh, Dennis L.; and Sissenstein, David W., 4,358,627, Cl. 570-238.000.

Rivette, Denni F.; and Disko, Harry, to Marvin Glass & Associates. Tethered toy vehicle control apparatus. 4,358,104, Cl. 272-31.00R.

Rivin, Evgeny I. Key connection. 4,358,215, Cl. 403-357.000.

RLD Industries Ltd.: *See—*
Dennis, Ashley A., 4,357,773, Cl. 40-618.000.

Roach, Thomas J.: *See—*
Wislocky, Joseph; and Roach, Thomas J., 4,358,784, Cl. 357-71.000.

Robert Bosch GmbH: *See—*
Gruner, Heiko; and Zimmermann, Georg, 4,358,748, Cl. 338-25.000.
Hohn, Richard; Jung, Werner; and Winter, Gerhard, 4,358,779, Cl. 346-135.100.
Kraus, Bernd; and Glockler, Otto, 4,357,829, Cl. 73-204.000.
Rosenzopf, Gunter; Schnurle, Hans; Rebmann, Wolfgang; and Drews, Ulrich, 4,357,922, Cl. 123-489.000.
Stumpp, Gerhard; Wessel, Wolf; Flaig, Ulrich; Piwonka, Fridolin; and Walz, Ludwig, 4,357,920, Cl. 123-446.000.
Wolf, Konrad; and Zabler, Erich, 4,358,762, Cl. 340-870.350.

Roberts, J. Sydney: *See—*
Bastian, Thomas W.; and Roberts, J. Sydney, 4,357,795, Cl. 60-204.000.

Roberts, Michael G.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,358,320, Cl. 106-282.000.

Robertshaw Controls Company: *See—*
Branson, Charles D.; and Demi, Roy C., 4,357,748, Cl. 29-622.000.
Demi, Roy C., 4,358,647, Cl. 200-61.860.

Robinson, Philip I.: *See—*
Campbell, John, Jr.; Russell, Larry H.; and Robinson, Philip I., 4,357,907, Cl. 122-4.00D.

Roche, William J.; and Anderson, John W., Jr., to GTE Products Corporation. Discharge lamps having internal starting aid capacitively coupled to one of the electrodes. 4,358,701, Cl. 313-197.000.

Rochling-Burbach Weiterverarbeitung GmbH: *See—*
Meier, Friedrich, 4,358,231, Cl. 409-299.000.

Rock Oil Corporation: *See—*
Jubenville, Duncan B., 4,358,373, Cl. 210-181.000.

Rockwell International Corporation: *See—*
Campbell, John, Jr.; Russell, Larry H.; and Robinson, Philip I., 4,357,907, Cl. 122-4.00D.
Cascini, Michael R., 4,358,753, Cl. 340-347.00P.
Cumming, James C., 4,358,000, Cl. 188-71.500.
Lange, Frederick F., 4,358,516, Cl. 429-193.000.
Mahoney, Murray W.; Hamilton, C. Howard; and Paton, Neil E., 4,358,324, Cl. 148-12.70A.
Oeffinger, Thomas R.; Bailey, Robert F.; Kobayashi, Tsutomu; and Reekstin, John P., 4,358,339, Cl. 156-643.000.

Rodewald, Paul G.: *See—*
Haag, Werner O.; Olson, David H.; and Rodewald, Paul G., 4,358,395, Cl. 252-411.00R.

Rodish, John, to Polynovus Industries, Inc. Safety grass cutter for rotary lawn mower. 4,357,789, Cl. 56-295.000.

Rodish, John, to Polynovus Industries, Inc. Apparatus for coating paper with a plastic pattern. 4,358,332, Cl. 156-356.000.

Roeder, Robert J.: *See—*
Jackson, David M.; and Roeder, Robert J., 4,357,939, Cl. 128-290.00R.

Roethlisberger, Jerry M.: *See—*
Goodrich, Stanley R., Jr.; and Roethlisberger, Jerry M., 4,358,211, Cl. 403-27.000.

Roger, Loic: *See—*
Brule, Gerard; Roger, Loic; Fauquant, Jacques; and Piot, Michel, 4,358,465, Cl. 426-42.000.

Rogers, Lunt & Bowlen Company: *See—*
Krejmas, John S., 4,357,839, Cl. 74-615.000.

Rogerson Aircraft Controls: *See—*
Badger, Everett H.; and Rogerson, Michael J., 4,357,719, Cl. 4-316.000.

Rogerson, Michael J.: *See—*
Badger, Everett H.; and Rogerson, Michael J., 4,357,719, Cl. 4-316.000.

Rohde, Gunter; and Schiel, Christian, to J. M. Voith GmbH. Calender for a traveling web, such as a paper web. 4,357,866, Cl. 100-162.00R.

Rohde & Schwarz GmbH & Co. KG: *See—*
Ernst, Bernhard; Schmengler, Eckhard; and Pichl, Hans, 4,358,768, Cl. 343-118.000.

Rohlin, Robert W. Chuck operating device for hand drill. 4,358,230, Cl. 408-124.000.

Rohm and Haas Company: *See—*
Nemec, Joseph W.; and Cholod, Michael S., 4,358,622, Cl. 568-470.000.
Swithenbank, Colin, 4,358,308, Cl. 71-98.000.

Roke, Lindsey J.: *See—*
Hawkins, Harold R.; Gardner, Clive A.; Roke, Lindsey J.; Clark, Richard J.; and Rumble, Warwick F., 4,358,213, Cl. 403-231.000.

Roland Corporation: *See—*
Suenaga, Noboru, 4,357,852, Cl. 84-1.160.

Rolls-Royce Limited: *See—*
Lock, Alan H., 4,357,823, Cl. 73-1.00B.
Moore, Alan, 4,358,120, Cl. 277-192.000.

Romano, Ugo: *See—*
Paggini, Alberto; Romano, Ugo; Furlone, Donato; and Sanfilippo, Domenico, 4,358,625, Cl. 568-867.000.
Romeas, Rene: *See—*
Oprandi, Pierre; and Romeas, Rene, 4,358,787, Cl. 358-14.000.
Rosa, John, to Westinghouse Electric Corp. Thyristor-controlled AC/DC converter system. 4,358,818, Cl. 363-46.000.
Rosenbaum, Georges: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,358,286, Cl. 8-405.000.
Rosenbaum, Walter S.: *See—*
Glickman, David; Repass, James T.; Rosenbaum, Walter S.; and Russell, Janet G., 4,358,824, Cl. 364-200.000.
Rosenhahn, Lothar: *See—*
von Konig, Anita; Moll, Franz; and Rosenhahn, Lothar, 4,358,531, Cl. 430-434.000.
Rosenquist, Niles R.: *See—*
Quinn, Clayton B.; and Rosenquist, Niles R., 4,358,569, Cl. 525-439.000.
Rosenstein, Harold: *See—*
Schoen, Allen H.; Schneider, John J.; Bevan, David; Rosenstein, Harold; and Woodley, David R., 4,358,074, Cl. 244-12.400.
Rosenthal, Joel W.; Dahlberg, Arthur J.; and Kuehler, Christopher W., to Chevron Research Company. Two-stage coal liquefaction process with process-derived solvent having a low heptane-insolubles content. 4,358,359, Cl. 208-8.0LE.
Rosenzopf, Gunter; Schnurle, Hans; Rebmann, Wolfgang; and Drews, Ulrich, to Robert Bosch GmbH. Method and apparatus for operating a fuel-supply system with lambda control. 4,357,922, Cl. 123-489.000.
Rosler, Helmut; and Bigall, Klaus-Dieter, to Siemens Aktiengesellschaft. Digital semiconductor circuit for an electronic organ. 4,357,853, Cl. 84-1.270.
Rosomm, Herbert: *See—*
Marten, Rainer; Rosomm, Herbert; and Schwenke, Heinrich, 4,358,854, Cl. 378-45.000.
Ross, Klaus D. Name plate system. 4,357,767, Cl. 40-1.500.
Rossignol, E. John: *See—*
Moss, Owen R.; Clark, Mark L.; and Rossignol, E. John, 4,357,903, Cl. 119-15.000.
Roth, Clarence E. Blending system for dry solids. 4,358,207, Cl. 366-336.000.
Roth, Lotte, heir: *See—*
Buhrer, Erwin, deceased; Brandli, Grete, heir; Roth, Lotte, heir; and Baumann, Doris, heir, 4,357,984, Cl. 164-37.000.
Roudebush, Robert D., Jr., to Signal Sentry Industries, Inc. Automatically cancelling turn signal apparatus. 4,358,751, Cl. 340-73.000.
Rozsypal, Josef: *See—*
Janecek, Jaroslav; Jiruse, Jaroslav; and Rozsypal, Josef, 4,358,101, Cl. 271-12.000.
RTS Systems, Inc.: *See—*
Hubler, Stanley L., 4,358,644, Cl. 179-170.0NC.
Rubin, Harvey. Detection and isolation of endorphin mRNA using a synthetic oligodeoxynucleotide. 4,358,586, Cl. 536-27.000.
Rubino, James: *See—*
Richardson, James M.; and Rubino, James, 4,358,016, Cl. 209-564.000.
Rudolph, Otfried; Peter, Gunter; and Fischer, Karlheinz, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Driving mechanism for groups of adjustable sheet-gripping elements in a transfer cylinder of a sheet-fed printing machine. 4,357,870, Cl. 101-246.000.
Ruell, Hartwig; and Feix, Wolfgang, to Siemens Corporation. Transducer for fingerprints and apparatus for analyzing fingerprints. 4,358,677, Cl. 250-216.000.
Rukes, Dale H. Cylinder boring machine stand. 4,358,229, Cl. 408-88.000.
Rumble, Warwick F.: *See—*
Hawkins, Harold R.; Gardner, Clive A.; Roke, Lindsey J.; Clark, Richard J.; and Rumble, Warwick F., 4,358,213, Cl. 403-231.000.
Runyon, Robert C.: *See—*
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Rusch, Dieter: *See—*
Schmidt, Eckehard; Rusch, Dieter; and Tauber, Manfred, 4,358,331, Cl. 156-275.500.
Russell, Janet G.: *See—*
Glickman, David; Repass, James T.; Rosenbaum, Walter S.; and Russell, Janet G., 4,358,824, Cl. 364-200.000.
Russell, Larry H.: *See—*
Campbell, John, Jr.; Russell, Larry H.; and Robinson, Philip I., 4,357,907, Cl. 122-4.00D.
Ruti Machinery Works Ltd.: *See—*
Kohler, Lothar, 4,357,964, Cl. 139-448.000.
Ryan, William D.: *See—*
Stewart, James A. C.; Armstrong, Brian M.; Gamble, Harold S.; Mallon, John; Monds, Fabian C.; Ryan, William D.; and Wakefield, James, 4,358,759, Cl. 340-554.000.
Rysek, Joseph J., to Lubrizol Corporation, The. Novel metal working additive compositions, lubricants containing them and metal workpieces coated with same. 4,358,509, Cl. 428-461.000.
Rysti, Alpo. Method and apparatus for sorting timber pieces. 4,358,009, Cl. 198-365.000.
S.A.E. Societa Anonima Elettrificazione S.p.A.: *See—*
Finzi, Massimo, 4,357,786, Cl. 52-649.000.
S. C. Johnson & Son, Inc.: *See—*
Verbrugge, Calvin J., 4,358,573, Cl. 526-272.000.
Saalfrank, Werner: *See—*
Greiner, Hans-Joachim; and Saalfrank, Werner, 4,358,684, Cl. 378-98.000.
Safety Electrical Equipment Corp.: *See—*
Hudson, David J.; and Francis, Willard P., 4,357,988, Cl. 165-26.000.
Saidla, Glen W., to Whitney & Company, Inc. Cellular forming agent in resinous systems and resulting products. 4,358,548, Cl. 521-128.000.
Saint, David; Eldon, James, III; and Latone, Thomas L., to Graco Metal Products, Inc. Ball and socket safety hinge. 4,357,735, Cl. 16-224.000.
Saint-Gobain Industries: *See—*
Paymal, Andre, 4,357,933, Cl. 126-449.000.
Saito, Iwao: *See—*
Nagata, Seigo; and Saito, Iwao, 4,358,226, Cl. 406-82.000.
Saito, Tadamori: *See—*
Yamazaki, Suguru; and Saito, Tadamori, 4,358,837, Cl. 368-69.000.
Saito, Tsutomu: *See—*
Ezawa, Sadaaki; and Saito, Tsutomu, 4,357,849, Cl. 84-1.010.
Sakai, Hiromu: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; and Sakai, Hiromu, 4,358,493, Cl. 428-35.000.
Sakai, Utaro: *See—*
Hasegawa, Masami; Sakai, Utaro; and Naitoh, Takahisa, 4,358,380, Cl. 210-679.000.
Sakai, Yutaka, to Fuji Photo Optical Co., Ltd. Focussing apparatus having blurring indicator. 4,358,190, Cl. 354-198.000.
Sakakibara, Tadamori; Matsushima, Yoshihisa; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for producing aldehydes. 4,358,621, Cl. 568-454.000.
Sakakibara, Tadamori: *See—*
Okumura, Yoshiharu; Sakakibara, Tadamori; and Kaneko, Katsumi, 4,358,626, Cl. 568-899.000.
Sakamoto, Gunji: *See—*
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Suzuki, Munetoshi; Yamamoto, Hiromasa; and Sakamoto, Gunji, 4,358,093, Cl. 266-103.000.
Sakurai, Nobuo; and Moriya, Kikuo, to Amada Company, Limited. Method and apparatus for controlling the feeding of a bandsaw blade of horizontal bandsaw machines. 4,357,848, Cl. 83-801.000.
Salathe, George F.: *See—*
Kaufman, Marvin L.; and Salathe, George F., 4,358,571, Cl. 525-524.000.
Salete-Garces, Felipe. Pneumatic grain conveyance rice mill. 4,357,864, Cl. 99-484.000.
Salvador, Rene: *See—*
Konig-Lumer, Inge; Schwenk, Ulrich; Salvador, Rene; and Kapfinger, Josef, 4,358,389, Cl. 252-70.000.
Samsonite Corporation: *See—*
Castelli, Renato, 4,358,006, Cl. 190-18.00A.
Sanchez, Juan M. Adaptive-predictive control system. 4,358,822, Cl. 364-151.000.
Sand, Darrel R. Ring gap seal. 4,358,121, Cl. 277-218.000.
Sandberg, Lennart, to ASEA Aktiebolag. Electrical converter equipment having reduced harmonic circuits. 4,358,819, Cl. 363-68.000.
Sanders Associates, Inc.: *See—*
Mehron, Martin E., 4,358,766, Cl. 343-18.00E.
Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,357,811, Cl. 68-5.00E.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Continuous processing apparatus for treatment of tubular knitted fabric material. 4,357,811, Cl. 68-5.00E.
Sandoz Ltd.: *See—*
Wicki, Heinz; and Vogel, Claude, 4,358,287, Cl. 8-540.000.
Sandys, Jeffrey P.: *See—*
Paton, H. Neil; Skilling, John B.; Sandys, Jeffrey P.; and Gylland, E. Frederick, Jr., 4,358,096, Cl. 267-9.00C.
Sanfilippo, Domenico: *See—*
Paggini, Alberto; Romano, Ugo; Furlone, Donato; and Sanfilippo, Domenico, 4,358,625, Cl. 568-867.000.
Sanford, Richard: *See—*
Bourdon, Normand C.; and Sanford, Richard, 4,358,179, Cl. 339-217.00S.
Sano, Masao: *See—*
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Santilli, Donald S., to Chevron Research Company. Residual oil processing catalysts. 4,358,400, Cl. 252-455.00R.
Sanyo Electric Co. Ltd.: *See—*
Iwasaki, Shoji, 4,358,761, Cl. 340-792.000.
Sanyo-Kokusaku Pulp Co.: *See—*
Akimoto, Saburo; Maruchi, Sachio; Fukaya, Masahiro; Shibano, Tomishi; Chimura, Ippei; Asakura, Hiroshi; Kitazume, Keisuke; and Fuse, Shiro, 4,358,494, Cl. 428-40.000.
Sanzenbacher, Charles W.; and Meissner, David C., to Midrex Corporation. Dry collection of metallized fines. 4,358,310, Cl. 75-25.000.
Saphir, Oded: *See—*
Greenhut, Bart E.; and Saphir, Oded, 4,358,056, Cl. 239-305.000.
Sasaki, Noboru; Sera, Hidefumi; Ohki, Nobutaka; and Yamaguchi, Jun, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive element. 4,358,534, Cl. 430-537.000.
Sasaki, Toshiharu: *See—*
Shimizu, Ryota; Sasaki, Toshiharu; and Ohara, Naoyuki, 4,358,800, Cl. 360-90.000.

Sass, Allan; McCarthy, Harry E.; Kaufman, Paul R.; and Finney, Clement S., to Occidental Petroleum Corporation. Process for the production and recovery of fuel values from coal. 4,358,344, Cl. 201-4.000.

Satellite Balloon Manufacturing Co.: *See—*
Walker, S. David, 4,358,487, Cl. 428-11.000.

Sato, Hideo: *See—*
Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, 4,358,521, Cl. 430-83.000.

Sato, Hiromi: *See—*
Sunagawa, Makoto; Sato, Hiromi; Katsube, Junki; and Yamamoto, Hisao, 4,358,620, Cl. 568-439.000.

Sato, Munekazu; Nishimura, Muneo; and Harada, Taichi, to Matsushita Electric Industrial Co., Ltd. Ignition apparatus for a burner. 4,358,813, Cl. 361-263.000.

Sato, Noboru, to Sony Corporation. Optical information record member. 4,358,780, Cl. 346-135.100.

Sato, Take: *See—*
Narumiya, Tsuneaki; Sato, Take; and Iwasawa, Shigeru, 4,358,505, Cl. 428-332.000.

Satoh, Toshio; Mizusawa, Motoo; and Takeda, Fumio, to Mitsubishi Denki Kabushiki Kaisha. Multiple frequency antenna feed system. 4,358,770, Cl. 343-786.000.

Sauer, Ivan, to Erwin Hengstler Hydraulik GmbH. Electrohydraulic control arrangement. 4,357,955, Cl. 137-270.000.

Scal Sweden AB: *See—*
Svensson, Stig-Ake, 4,358,145, Cl. 294-81.0SF.

Scharwachter, Peter; Gutsche, Klaus; Kohlmann, Wilhelm; Hartleben, York; and Heberle, Wolfgang, to Nordmark-Werke GmbH. Tertiary imidazolyl alcohols and method for the treatment of generalized and local infections caused by fungi and yeasts. 4,358,458, Cl. 424-273.00R.

Schatz, Ralph H.: *See—*
Powers, Kenneth W.; and Schatz, Ralph H., 4,358,560, Cl. 524-468.000.

Scheel, Russell, to SI Handling Systems, Inc. Conveyor system with access way. 4,357,875, Cl. 104-50.000.

Scheele, Wilfred: *See—*
Winburn, Charles F.; Craft, William K.; Keferl, Gregory T.; Scheele, Wilfred; and Baker, Juanita, 4,357,741, Cl. 27-19.000.

Scheffel, Walter. Loom with weft picking by a flowing medium. 4,357,963, Cl. 139-435.000.

Scheffels, Wilheim: *See—*
Steigerwald, Karl-Heinz; Anderl, Peter; Kappelsberger, Erwin; Monch, Clauspeter; Konig, Dieter; and Scheffels, Wilheim, 4,358,657, Cl. 219-121.0EN.

Scheit, Arnold: *See—*
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Schenck, Thomas M.: *See—*
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Scherer, George W.: *See—*
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Schering AG: *See—*
Kruger, Hans R.; and Joppien, Hartmut, 4,358,408, Cl. 260-453.300.
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Schering Corporation: *See—*
Bristol, James A.; and Lovey, Raymond G., 4,358,453, Cl. 424-256.000.
Bristol, James A.; and Lovey, Raymond G., 4,358,454, Cl. 424-256.000.

Scheurecker, Werner, to Voest-Alpine Aktiengesellschaft. Supporting and guiding stand arrangement to be used in a bow-type continuous casting plant. 4,358,007, Cl. 193-35.00R.

Schiel, Christian: *See—*
Rohde, Gunter; and Schiel, Christian, 4,357,866, Cl. 100-162.00R.

Schlapman, William J.; and Wirsbinski, James L., to J. I. Case Company. Welding fume and spark trap. 4,358,300, Cl. 55-245.000.

Schlegel Corporation: *See—*
Miska, Stanley R., 4,358,497, Cl. 428-85.000.

Schliemann, Willibald: *See—*
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Schmengler, Eckhard: *See—*
Ernst, Bernhard; Schmengler, Eckhard; and Pichl, Hans, 4,358,768, Cl. 343-118.000.

Schmid, Hans; Becker, Klaus; Leuchtmann, Guenter; and Schoettle, Klaus, to BASF Aktiengesellschaft. Process and device for generating tape tension in a tape transport apparatus. 4,358,069, Cl. 242-192.000.

Schmid, Walter: *See—*
Mohacsi, Sandor; Hammen, Theodor; and Schmid, Walter, 4,357,879, Cl. 105-199.00R.

Schmidt, Detlef E., to Topper Manufacturing Corporation. Compact collapsible microform viewer. 4,358,184, Cl. 353-119.000.

Schmidt, Eckehard; Rusch, Dieter; and Tauber, Manfred, to Licentia Patent-Verwaltungs-G.m.b.H. Method of embedding semiconductor components in plastics. 4,358,331, Cl. 156-275.500.

Schmidt, Manfred, to Sybron Corporation. Dental instrument retraction activator. 4,358,270, Cl. 433-78.000.

Schmidt, Phillip A.; and Norton, James H. Self-releasing choker. 4,358,144, Cl. 294-75.000.

Schmitt, Frederick L.: *See—*
Klemarczyk, Philip T.; Schmitt, Frederick L.; Granda, Edward J.; and Luccarelli, Domenick, Jr., 4,357,949, Cl. 131-276.000.

Schneider, Jerry M.; and Coules, Ronald A., to Unarco Industries, Inc. Wheel having built-in hub. 4,358,162, Cl. 301-63.00R.

Schneider, John J.: *See—*
Schoen, Allen H.; Schneider, John J.; Bevan, David; Rosenstein, Harold; and Woodley, David R., 4,358,074, Cl. 244-12.400.

Schnurle, Hans: *See—*
Rosenzopf, Gunter; Schnurle, Hans; Rebmann, Wolfgang; and Drews, Ulrich, 4,357,922, Cl. 123-489.000.

Schoen, Allen H.; Schneider, John J.; Bevan, David; Rosenstein, Harold; and Woodley, David R., to Boeing Company, The. Propulsion system for V/STOL aircraft. 4,358,074, Cl. 244-12.400.

Schoettle, Klaus: *See—*
Schmid, Hans; Becker, Klaus; Leuchtmann, Guenter; and Schoettle, Klaus, 4,358,069, Cl. 242-192.000.

Scholl, Jule A.; and Fitts, Paul F. Method and apparatus for measuring the rotation of a work table. 4,358,723, Cl. 318-661.000.

Schomburg, Calvin: *See—*
Ecord, Glenn M.; and Schomburg, Calvin, 4,358,480, Cl. 427-140.000.
Ecord, Glenn M.; and Schomburg, Calvin, 4,358,486, Cl. 427-379.000.

Schrems, James M. Adjustable exercise bench. 4,358,109, Cl. 272-144.000.

Schriver, Clem B.: *See—*
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Schroeder, William E., Jr.: *See—*
Kissell, Fred N.; Muldoon, Terry L.; Schroeder, William E., Jr.; and Peterson, Carl R., 4,358,160, Cl. 299-43.000.

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Schubert, Herrmann; Demus, Dietrich; Zaschke, Horst; Kuschel, Frank; Pelzl, Gerhard; Nothnikz, Hans-Ulrich; and Schliemann, Willibald, to Veb Werk fur Fernsehelektronik im Veb Kombinat Mikroelektronik. Nematic liquid crystal compounds. 4,358,589, Cl. 544-179.000.

Schultheiss, Karl-Heinz: *See—*
Stemme, Otto; Staudacher, Frank; Lermann, Peter; Wagensonner, Eduard; and Schultheiss, Karl-Heinz, 4,358,805, Cl. 360-106.000.

Schultz, Hans-Joachim: *See—*
Hefter, Josef; Heitmann, Peter; Link, Christoph; Schultz, Hans-Joachim; Stotz, Wolf-Gunter; and Volz, Karl, 4,357,743, Cl. 29-116.0AD.

Schuppiser, Jean-Luc: *See—*
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Schutte, Marlin D., to General Signal Corporation. Draft tube apparatus. 4,358,206, Cl. 366-262.000.

Schwander, Andreas; and Thalmann, Dieter, to Rieter Machine Works, Ltd. Apparatus for producing thread or yarn reserve windings on a bobbin tube. 4,358,065, Cl. 242-18.0PW.

Schwartz, Lawrence: *See—*
Arnold, Bruce K.; and Schwartz, Lawrence, 4,358,176, Cl. 339-88.00R.

Schwartz, Thomas A. Heel binding for cross-country skis. 4,358,131, Cl. 280-614.000.

Schwarze, Werner; and Kleemann, Axel, to Degussa Aktiengesellschaft. Cyclopropane carboxylic acid and process for their production and use. 4,358,459, Cl. 424-283.000.

Schweitzer, Robert: *See—*
Schweitzer, Robert A.; and Tate, James H., 4,357,948, Cl. 131-173.000.

Schweitzer, Robert A.; and Tate, James H., to Schweitzer, Robert. Smoke filtering and cooling device. 4,357,948, Cl. 131-173.000.

Schwenk, Ulrich: *See—*
Konig-Lumer, Inge; Schwenk, Ulrich; Salvador, Rene; and Kapfinger, Josef, 4,358,389, Cl. 252-70.000.

Schwenke, Heinrich: *See—*
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Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, to Xerox Corporation. Fiber optic laser device and light emitter utilizing the device. 4,358,851, Cl. 372-97.000.

Scott Paper Company: *See—*
Urion, Kenard E., 4,358,025, Cl. 220-258.000.

Scully, Andrew J., to United States of America, Army. Trailer frame beam. 4,358,134, Cl. 280-676.000.

Sealectro Corporation: *See—*
Dreyer, Charles W., 4,358,174, Cl. 339-64.00M.

Sechler, Clark W.; and Sherbert, Archie T., Jr., to Boeing Vertol Company. Light dimming system for grounded-side control of discrete indicator lamps. 4,358,714, Cl. 315-291.000.

Seifert, Gerd, to Siemens Aktiengesellschaft. Installation for determining the temperature of the heater coil of an x-ray tube. 4,358,683, Cl. 378-101.000.

Seiler, Hanspeter: *See—*
Seiler, Niklaus; and Seiler, Hanspeter, 4,358,257, Cl. 417-517.000.

Seiler, Niklaus; and Seiler, Hanspeter, to Maschinenfabrik Meyer AG. Piston pump installation and method of operating the same. 4,358,257, Cl. 417-517.000.

Seishi Yajima: *See—*
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Fukuda, Kazushige, 4,358,576, Cl. 528-30.000.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
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Nakano, Shiro; Naito, Yoshiro; Nakamura, Shigeki; Ikena, Tosimasa; and Tanaka, Kazuo, 4,358,474, Cl. 427-12.000.
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akiro; Katayama, Shitomi; and Nomura, Suguru, to NHK Spring Co., Ltd.; and Yokohama Kiko Co., Ltd. Multi-layer reflectors. 4,358,507, Cl. 428-429.000.
Senda, Eiichi: *See—*
Naganoma, Masanori; Kondo, Nobuo; Senda, Eiichi; Hibi, Hitoshi; Suzuki, Kunihiko; Ohta, Nobuyoshi; and Ito, Katsunori, 4,358,050, Cl. 236-13.000.
Senoo, Tetsuo; and Kogawa, Kouichi, to Nissan Motor Co., Ltd. Brightness control device for light emitting display of electronic meter. 4,358,713, Cl. 315-291.000.
Sera, Hidefumi: *See—*
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Serban, Alexander; Watson, Keith G.; and Farquharson, Graeme J., to ICI Australia Limited. Herbicidal quinoxaline carboxylic acid derivatives. 4,358,307, Cl. 71-92.000.
Sery, Jacques, to Compagnie Internationale Pour l'Informatique Cii Honeywell Bull. Method of checking validity of coded alpha/numeric signals with a data processor and a memory. 4,358,849, Cl. 371-53.000.
Sessions, Byron J. Rapid recovery hot water boiler. 4,357,911, Cl. 122-441.000.
Seto, Yutaka: *See—*
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Setra Systems, Inc.: *See—*
Lee, Shih-Ying; and Briefer, Dennis K., 4,358,814, Cl. 361-283.000.
Sexsmith, Frederick H.: *See—*
Zimmer, David J.; Sexsmith, Frederick H.; and Howard, Dennis D., 4,358,476, Cl. 427-44.000.
Sexton, Richard W., to Material Concepts, Inc. Method of isothermally forming a copper base alloy fiber reinforced composite. 4,357,985, Cl. 164-61.000.
Seykora, James E., to United States Steel Corporation. Apparatus for securing overlapping portions of two digger tooth members together. 4,357,765, Cl. 37-142.00R.
Shadford, Alan R. Exercising stand. 4,358,106, Cl. 272-93.000.
Sharff, Harold M. Foot rest and actuator for chairs for patients and invalids. 4,358,156, Cl. 297-434.000.
Shaw, Ian M.; and Stack, William R., to ASARCO Incorporated. Low tin jewel metal alloy. 4,358,422, Cl. 420-577.000.
Shaw, Sharon G., executrix: *See—*
Shaw, William D., deceased; First National Bank of Cobb County, executor; and Shaw, Sharon G., executrix, 4,357,962, Cl. 138-125.000.
Shaw, Wilfrid G.; Terrill, David B.; and Woodbury, David R., to Standard Oil Company, The. Process for producing unsaturated aliphatic acids. 4,358,608, Cl. 562-534.000.
Shaw, William D., deceased; First National Bank of Cobb County, executor; and Shaw, Sharon G., executrix. Method and apparatus for producing tubular article. 4,357,962, Cl. 138-125.000.
Shebley, David P. Meditation supporting device. 4,358,013, Cl. 206-45.340.
Sheldon, William W.; and Axford, Theodore G., to Sheldon, William W. System for holding and transporting lobsters. 4,357,902, Cl. 119-2.000.
Shell Oil Company: *See—*
Bannon, Robert P., 4,358,367, Cl. 208-310.00Z.
Brownscombe, Thomas F., 4,358,578, Cl. 528-91.000.
Eckert, Rudolf J. A., 4,358,565, Cl. 525-280.000.
Pilgram, Kurt H. G., 4,358,611, Cl. 564-34.000.
Slaugh, Lynn H., 4,358,628, Cl. 585-455.000.
Telfer, Alexander; and McMillan, Dale H., 4,358,682, Cl. 250-357.100.
Ten Haken, Pieter; and Webb, Shirley B., 4,358,446, Cl. 424-245.000.
Sherbert, Archie T., Jr.: *See—*
Sechler, Clark W.; and Sherbert, Archie T., Jr., 4,358,714, Cl. 315-291.000.
Sherer, Robert B.; and Wiessner, Edward E., to Whirlpool Corporation. Self-cleaning under basket lint filter for automatic washers. 4,357,813, Cl. 68-18.00F.
Shetler, Earl B. Back flow valve. 4,357,959, Cl. 137-853.000.
Shiba, Keisuke, to Fuji Photo Film Co., Ltd. Photosensitive lithographic printing plate precursor and a method for preparing a printing plate therefrom. 4,358,530, Cl. 430-273.000.
Shibano, Tomishi: *See—*
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Shida, Masaharu: *See—*
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Shimizu, Atsushi: *See—*
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Shimizu, Chiyuki, to Toshiba Silicones Ltd. Room temperature curable polyorganosiloxane compositions. 4,358,558, Cl. 524-379.000.
Shimizu, Hirokazu: *See—*
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Shimizu, Ryota; Sasaki, Toshiharu; and Ohara, Naoyuki, to Matsushita Electric Industrial Co., Ltd. Operation control device for tape recorders. 4,358,800, Cl. 360-90.000.
Shimogawa, Toshiaki: *See—*
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Tsuge, Noboru; Kuwakado, Satosi; Shimogawa, Toshiaki; and Takei, Toshihiro, 4,358,136, Cl. 280-806.000.
Shimomura, Susumu: *See—*
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Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Suzuki, Munetoshi; Yamamoto, Hiromasa; and Sakamoto, Gunji, to Kawasaki Steel Corporation. Steel strip continuous annealing furnace. 4,358,093, Cl. 266-103.000.
Shimp, Alan B.: *See—*
Wafer, John A.; Beatty, William E., Jr.; and Shimp, Alan B., 4,358,810, Cl. 361-93.000.
Shimp, David A., to Celanese Corporation. Aqueous air-drying cationic epoxy ester coating compositions. 4,358,551, Cl. 523-414.000.
Shin-Etsu Chemical Co., Ltd.: *See—*
Okamoto, Haruo; and Yamada, Motoyuki, 4,358,306, Cl. 65-32.000.
Shinohara, Makoto; and Miyashiro, James J., to Morton-Norwich Products, Inc. Epoxy resinous molding compositions having low coefficient of thermal expansion and high thermal conductivity. 4,358,552, Cl. 523-443.000.
Shinshu Seiki Kabushiki Kaisha: *See—*
Mitsui, Yoshihiro, 4,358,776, Cl. 346-76.0PH.
Shinskey, Francis G., to Foxboro Company, The. Control of alcohol distillation. 4,358,346, Cl. 203-1.000.
Shionogi & Co., Ltd.: *See—*
Igarashi, Kikuo; Honma, Tsunetoshi; and Sugawara, Tamio, 4,358,585, Cl. 536-16.800.
Shiraishi, Motoatsu; Matsuda, Tatsushi; and Sano, Masao, to Honda Giken Kogyo Kabushiki Kaisha. Press apparatus. 4,358,263, Cl. 425-397.000.
Shishido, Toetsu: *See—*
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Fukuda, Kazushige, 4,358,576, Cl. 528-30.000.
Sholette, William P.: *See—*
Joshi, Ashok V.; Jatkar, Arun D.; and Sholette, William P., 4,358,515, Cl. 429-191.000.
Showalter, William E., to Union Oil Company of California. Solution mining process. 4,358,157, Cl. 299-4.000.
Showalter, William E., to Union Oil Company of California. Solution mining process. 4,358,158, Cl. 299-4.000.
Shubow, Calvin, to Universal Component Systems, Inc. Concrete reinforced wall modules for use in building construction. 4,357,783, Cl. 52-439.000.
Shull, John C. Rattan joint. 4,358,214, Cl. 403-234.000.
Shumaker, John F., to J. I. Case Company. Asymmetric backhoe. 4,358,240, Cl. 414-694.000.
Shumka, Alex: *See—*
Johnston, Merrill F.; Shumka, Alex; Miller, Emmett; and Evans, Kenneth C., 4,358,732, Cl. 324-73.00R.
Shunichi, Nakayama: *See—*
Masami, Takagi; Shunichi, Nakayama; and Kazuyoshi, Honda, 4,358,349, Cl. 204-15.000.
Si Handling Systems, Inc.: *See—*
Nobel, Bruce, 4,357,876, Cl. 104-166.000.
Scheel, Russell, 4,357,875, Cl. 104-50.000.
Sieber, Peter; Kamber, Bruno; and Rink, Hans, to Ciba-Geigy Corporation. Cyclooctapeptides. 4,358,439, Cl. 424-177.000.
Siegrist, Werner, to Graf & Cie. A.G. Card clothing for carding machines. 4,357,738, Cl. 19-114.000.
Siemens Aktiengesellschaft: *See—*
Arremann, Hans, 4,358,811, Cl. 361-100.000.
Greiner, Hans-Joachim; and Saalfrank, Werner, 4,358,684, Cl. 378-98.000.
Heynisch, Hinrich, 4,358,705, Cl. 315-3.500.
Mugrauer, Hubert, 4,358,196, Cl. 355-10.000.
Pfleiderer, Hans-Joerg; Stein, Karl-Ulrich; Koubek, Michael; and Christiansen, Hans-Martin, 4,358,786, Cl. 358-310.000.
Rosler, Helmut; and Bigall, Klaus-Dieter, 4,357,853, Cl. 84-1.270.
Seifert, Gerd, 4,358,683, Cl. 378-101.000.
Siemens-Allis, Inc.: *See—*
Liu, Joseph C.; Wagner, Paul D.; and Keuper, John J., 4,358,696, Cl. 310-156.000.
Liu, Joseph C.; Wagner, Paul D.; and Keuper, John J., 4,358,697, Cl. 310-156.000.
Siemens Corporation: *See—*
Levy, Allan, 4,358,643, Cl. 179-170.0NC.
Ruell, Hartwig; and Feix, Wolfgang, 4,358,677, Cl. 250-216.000.
Sifniades, Stylianos; Tunick, Allen A.; and Koff, Fred W., to Allied Corporation. Decomposition of cumene oxidation product. 4,358,618, Cl. 568-385.000.
Signal Sentry Industries, Inc.: *See—*
Roudebush, Robert D., Jr., 4,358,751, Cl. 340-73.000.
Silva, Joseph A.; and Manchenko, Paul, to North American Philips Corporation. Light emitting diode assembly. 4,358,708, Cl. 315-58.000.

Silverman, Peter J., to Intel Magnetics, Inc. Method for sloping insulative layer in bubble memory. 4,358,356, Cl. 204-192.00E.

Sime, Sylvan H., to Simes, Inc. Limit switch tripping mechanism for lifting jacks. 4,358,087, Cl. 254-1.000.

Simes, Inc.: *See*—
Sime, Sylvan H., 4,358,087, Cl. 254-1.000.

Simeth, Claus; and Pietsch, Erich, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Arrangement for removal of dirt or other impurities interfering with the ink flow from the ink fountain of a printing press. 4,357,872, Cl. 101-350.000.

Simmonds Precision Products, Inc.: *See*—
Franklin, Cecil, 4,358,755, Cl. 340-518.000.

Simon, Franz; Huth, Werner; Dorbath, Bernd; and Zilske, Wolfgang, to Degussa Aktiengesellschaft. Alkaline bath for the electrolytic deposition of low carat yellow colored gold alloy layers. 4,358,351, Cl. 204-44.000.

Simons, Carel A. J.: *See*—
Heemskerk, Jacobus P. J.; Renes, Hendrik; and Simons, Carel A. J., 4,358,200, Cl. 356-123.000.

Singer Company, The: *See*—
Ferriss, Lincoln S., 4,358,742, Cl. 331-158.000.
Reinert, Gerhard, 4,358,335, Cl. 156-514.000.
Warner, Richard C., 4,358,832, Cl. 365-196.000.
Wittke, Ernest C., 4,358,839, Cl. 368-159.000.

Singh, Mahendra P.: *See*—
Harris, Charles G.; Mora, Erwin P.; Singh, Mahendra P.; and Solberg, David P., 4,357,806, Cl. 62-186.000.

Siptrott, Fred M. Unified action hydrocentrifugal machines. 4,357,797, Cl. 60-330.000.

Sircar, Shivaji: *See*—
Papinsick, John; Oransky, John J.; and Sircar, Shivaji, 4,358,111, Cl. 273-61.00R.

Sirotinsky, Alexandr A.: *See*—
Makeev, Anatoly E.; and Sirotinsky, Alexandr A., 4,357,761, Cl. 34-105.000.

Sissenstein, David W.: *See*—
Ameen, Joseph G.; Joseph, Charles A.; Rivenburgh, Dennis L.; and Sissenstein, David W., 4,358,627, Cl. 570-238.000.

Skedgell, Anthony N., to Daniel Doncaster & Sons Limited. Single phase glass compositions for use in protective and lubricating coatings for the heat treatment and hot working of metals. 4,358,544, Cl. 501-77.000.

SKF Industrial Trading & Development Co. B.V.: *See*—
Kumpar, Zvonimir Z., 4,357,810, Cl. 464-8.000.
Kumpar, Zvonimir Z., 4,358,283, Cl. 464-143.000.

Skilling, John B.: *See*—
Paton, H. Neil; Skilling, John B.; Sandys, Jeffrey P.; and Gylland, E. Frederick, Jr., 4,358,096, Cl. 267-9.00C.

Slaugh, Lynn H., to Shell Oil Company. Alkylation of benzene compounds with detergent range olefins. 4,358,628, Cl. 585-455.000.

Slaunwhite, Wilson R., Jr., to Research Foundation of State University of New York, The. Ligand compositions and processes for their manufacture and their use in radioimmunoassay. 4,358,435, Cl. 424-1.000.

Sleighter, George E., to PPG Industries, Inc. Method of and apparatus for analyzing atmosphere of a combustion chamber. 4,358,305, Cl. 65-29.000.

Sluys, Wesley W., to Builders Concrete, Inc. Floating moorage device for use with piles or dolphins. 4,357,891, Cl. 114-230.000.

Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., to Optical Coating Laboratory, Inc. Multi-layer coating method. 4,358,472, Cl. 427-10.000.

Smiltneek, Andrew J.: *See*—
Peterson, Gary M.; and Smiltneek, Andrew J., 4,358,698, Cl. 310-187.000.

Smith, Darrell F., Jr.; and Clatworthy, Edward F., to Huntington Alloys, Inc. Tube material for sour wells of intermediate depths. 4,358,511, Cl. 428-595.000.

Smith, Fritz A.; and Tabak, Samuel A., to Mobil Oil Corporation. Method for enhancing catalytic activity. 4,358,362, Cl. 208-91.000.

Smith, Fritz A., to Mobil Oil Corporation. Method for enhancing catalytic activity. 4,358,363, Cl. 208-91.000.

Smith International Inc.: *See*—
Newcomb, Alan L., 4,358,384, Cl. 252-19.000.

Smith, Thomas E.: *See*—
McKenzie, Everett R.; and Smith, Thomas E., 4,357,744, Cl. 29-451.000.

Smiths Industries Public Limited Company: *See*—
Beardmore, Geoffrey, 4,357,837, Cl. 74-5.00F.

Snamprogetti, S.p.A.: *See*—
Paggini, Alberto; Romano, Ugo; Furlone, Donato; and Sanfilippo, Domenico, 4,358,625, Cl. 568-867.000.

Societa Cavi Pirelli S.p.A.: *See*—
Lanfranconi, Attilio, 4,358,637, Cl. 174-127.000.

Societa' Pneumatici Pirelli S.p.A.: *See*—
Mezzanotte, Mario; and Turchetti, Gianni, 4,357,976, Cl. 152-354.0RB.

Societe Anonyme de Telecommunications Company: *See*—
de Passoz, Guy A. M., 4,358,845, Cl. 370-44.000.

Societe Anonyme Francaise du Ferodo: *See*—
Antoine, Jacquet-Maurice, 4,358,166, Cl. 308-26.000.

Societe Chimique des Charbonnages SA: *See*—
Cagnioncle, George, 4,358,227, Cl. 406-96.000.

Societe de Fabrication des Appareils Bourdon: *See*—
Biettron, Pierre, 4,357,831, Cl. 374-197.000.

Societe pour l'Exploitation de l'Hotel du Rhone: *See*—
Christen, Jean-Louis, 4,358,171, Cl. 312-286.000.

Soehnlen, Joseph A., to Superior Dairy, Inc. Process for converting sour whey into sweet whey and product. 4,358,464, Cl. 426-41.000.

Soejima, Shigeo: *See*—
Fujita, Tadashi; and Soejima, Shigeo, 4,358,428, Cl. 423-239.000.

Soileau, Trasimond A., to General Electric Company. Roadway luminaire. 4,358,816, Cl. 362-346.000.

Solberg, David P.: *See*—
Harris, Charles G.; Mora, Erwin P.; Singh, Mahendra P.; and Solberg, David P., 4,357,806, Cl. 62-186.000.

Somogyi, Ferenc: *See*—
Morva, Alajos; and Somogyi, Ferenc, 4,358,374, Cl. 210-242.300.

Sony Corporation: *See*—
Abe, Fumiyoshi, 4,358,720, Cl. 318-254.000.
Ichikawa, Shunsuke; and Tanaka, Masato, 4,358,852, Cl. 375-25.000.
Kimura, Shuichi, 4,358,842, Cl. 369-233.000.
Numata, Norio; and Yokoya, Satoshi, 4,358,638, Cl. 179-1.0GS.
Sato, Noboru, 4,358,780, Cl. 346-135.100.
Tada, Masahiro; Ichikawa, Hirokazu; Fukushima, Mitsuo; Nakamichi, Koya; Ouchi, Koji; and Ishigaki, Yoshio, 4,358,769, Cl. 343-742.000.

Soundcoat Company, Inc., The: *See*—
Kirschner, Francis, 4,358,148, Cl. 295-7.000.

Southwest Microwave, Inc.: *See*—
Cheal, James; and McHenry, Vincent J., 4,358,764, Cl. 343-5.0PD.

Spaw, William J.: *See*—
Folmsbee, Alan C.; Kokkonen, Kim; and Spaw, William J., 4,358,833, Cl. 365-200.000.

Spector, George: *See*—
Marsala, Charlotte; and Spector, George, 4,358,012, Cl. 206-39.000.

Sperner, Franz; and Brink, Heidi, deceased (by Brink, Rainer, heir), to Heraeus Edelmetalle GmbH. Method of preparing ceramic-coated dental prosthetic constructions. 4,358,271, Cl. 433-201.000.

Sperner, Franz; Aldinger, Fritz; and Zwergel, Wilhelm, to W. C. Heraeus GmbH. Heater plug for diesel engines. 4,358,663, Cl. 219-270.000.

Sperry Corporation: *See*—
Branigin, Michael H.; Knebel, Francis P.; and McClellan, Gerald V., 4,358,829, Cl. 364-900.000.
Butler, L. Dennis; and Mankin, Leonid, 4,358,235, Cl. 414-24.500.

Spohnheimer, John V., to Mostek Corporation. Method and apparatus for focusing a laser beam on an integrated circuit. 4,358,659, Cl. 219-121.0LB.

Spoo, Bruce H.: *See*—
Holcomb, Allen G.; and Spoo, Bruce H., 4,358,559, Cl. 524-380.000.

Sportartikelfabrik Karl Uhl GmbH: *See*—
Fleischmann, Josef; and Epple, Franz, 4,357,763, Cl. 36-67.00D.

Sprecker, Mark A.; and Hall, John B., to International Flavors & Fragrances Inc. Substituted tricyclodecane derivatives, processes for producing same and organoleptic uses thereof. 4,358,617, Cl. 568-373.000.

SPS Technologies, Inc.: *See*—
Boys, John T., 4,358,735, Cl. 324-208.000.

Sridhar, Ramamritham: *See*—
Victorovich, Grigori S.; Sridhar, Ramamritham; and Bell, Malcolm C. E., 4,358,430, Cl. 423-508.000.

Stack, William R.: *See*—
Shaw, Ian M.; and Stack, William R., 4,358,422, Cl. 420-577.000.

Stacy, W. Dodd, to Creare Incorporated. Self pumped solar energy collection system. 4,357,932, Cl. 126-433.000.

Stadler, Henry L.: *See*—
Lambe, John J.; McCarthy, Shaun L.; and Stadler, Henry L., 4,358,743, Cl. 332-7.510.

Stahli, Paul, to Geberit AG. Flush valve mounting for toilets. 4,357,720, Cl. 4-378.000.

Staker, Lynn L.: *See*—
Palmer, Denis L.; Palmer, Robert A., Jr.; and Palmer, Robert A., Sr., 4,358,693, Cl. 310-46.000.

Standard-Keil Hardware Manufacturing Company, a Division of Buildex Incorporated: *See*—
Villa, Joseph N., 4,357,972, Cl. 141-351.000.

Standard Oil Company, The: *See*—
Pedersen, S. Erik; Wagner, Louis F.; and Paparizos, Christos, 4,358,610, Cl. 562-535.000.
Shaw, Wilfrid G.; Terrill, David B.; and Woodbury, David R., 4,358,608, Cl. 562-534.000.

Standard Oil Company (Indiana): *See*—
Fields, Ellis K., 4,358,597, Cl. 548-142.000.
Keske, Robert G.; and Stephens, James R., 4,358,561, Cl. 524-600.000.
Kuhlmann, George E.; and Holzhauer, Juergen K., 4,358,600, Cl. 549-262.000.
Nimry, Tayseer S.; and Fields, Ellis K., 4,358,579, Cl. 528-188.000.
Nimry, Tayseer S.; and Fields, Ellis K., 4,358,580, Cl. 528-188.000.
Nimry, Tayseer S.; and Fields, Ellis K., 4,358,582, Cl. 528-353.000.
Paschke, Edward E.; Nimry, Tayseer S.; and Fields, Ellis K., 4,358,562, Cl. 524-600.000.

Standard Oil Company (Ohio): *See*—
Alford, Harvey E.; and Rightmire, Robert A., 4,358,366, Cl. 208-112.000.

Stark, Gerhard. Machine tool. 4,358,228, Cl. 408-35.000.

Starr, John B., Jr.: *See*—
Fox, Daniel W.; Kaduk, Bruce A.; and Starr, John B., Jr., 4,358,568, Cl. 525-439.000.

Staub, John T., Jr.; and Staub, Lucy A. Antenna for television reception. 4,358,773, Cl. 343-896.000.
Staub, Lucy A.: *See*—
Staub, John T., Jr.; and Staub, Lucy A., 4,358,773, Cl. 343-896.000.
Staudacher, Frank: *See*—
Stemme, Otto; Staudacher, Frank; Lermann, Peter; Wagensonner, Eduard; and Schultheiss, Karl-Heinz, 4,358,805, Cl. 360-106.000.
Stauffer Chemical Company: *See*—
Gless, Richard D., Jr., 4,358,612, Cl. 564-137.000.
Steigerwald, Karl-Heinz; Anderl, Peter; Kappelsberger, Erwin; Monch, Clauspeter; Konig, Dieter; and Scheffels, Wilheim, to Messer Griesheim GmbH. Sealing system for a movable vacuum chamber of a charged particle beam machine. 4,358,657, Cl. 219-121.0EN.
Stein, Karl-Ulrich: *See*—
Pfleiderer, Hans-Joerg; Stein, Karl-Ulrich; Koubek, Michael; and Christiansen, Hans-Martin, 4,358,786, Cl. 358-310.000.
Stein, Marc T.: *See*—
Thompson, David L.; Hartlaub, Jerome T.; and Stein, Marc T., 4,357,943, Cl. 128-419.0PG.
Steinberg, Richard: *See*—
Keller, Robert R.; Steinberg, Richard; and Whittemore, John P., 4,357,978, Cl. 160-41.000.
Steinbrecher, Donald H., to Philip Morris Incorporated. Apparatus and method for moisture measurement. 4,358,731, Cl. 324-58.50R.
Stemme, Otto; Staudacher, Frank; Lermann, Peter; Wagensonner, Eduard; and Schultheiss, Karl-Heinz, to AGFA-Gevaert AG. Playback and/or recording device for magnetic recording media, especially still photographs provided with a magnetizable coating. 4,358,805, Cl. 360-106.000.
Stemmler, Ingo; Muller, Hanns P.; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the production of low molecular weight polyhydroxyl compounds. 4,358,619, Cl. 568-388.000.
Stephens, James R.: *See*—
Keske, Robert G.; and Stephens, James R., 4,358,561, Cl. 524-600.000.
Sterling Drug Inc.: *See*—
Patterson, Donald E., 4,357,953, Cl. 137-88.000.
Stevens, Albert: *See*—
McMullan, James P.; and Stevens, Albert, 4,358,668, Cl. 219-528.000.
Stevens, Michael G.: *See*—
McCrary, Avis L.; and Stevens, Michael G., 4,358,577, Cl. 528-89.000.
Stevenson, Fred, to Dow Chemical Company, The. Freezer to microwave oven bag. 4,358,466, Cl. 426-106.000.
Stevenson, Robin, to General Motors Corporation. Method of treating low carbon steel for improved formability. 4,358,325, Cl. 148-125.000.
Stewart, James A. C.; Armstrong, Brian M.; Gamble, Harold S.; Mallon, John; Monds, Fabian C.; Ryan, William D.; and Wakefield, James, to Queens University of Belfast, The. Microwave movement detector. 4,358,759, Cl. 340-554.000.
Stiftelsen Institutet for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm: *See*—
Henoch, Bengt; and Berglind, Eilert, 4,358,765, Cl. 343-6.5SS.
Stivender, Paul M.; and Barrett, David M., to General Electric Company. Multiaxial x-ray apparatus. 4,358,856, Cl. 378-167.000.
Stockton, Allen L., to Liberty Embroidery, Inc. Fabric holding device for multi-head embroidery machines. 4,357,885, Cl. 112-103.000.
Stokes, Ronald E., to Xerox Corporation. Stitchers. 4,358,040, Cl. 227-5.000.
Stone, Walter E. Highway traffic lane and road edge reflectors. 4,358,217, Cl. 404-16.000.
Stotz, Wolf-Gunter: *See*—
Hefter, Josef; Heitmann, Peter; Link, Christoph; Schultz, Hans-Joachim; Stotz, Wolf-Gunter; and Volz, Karl, 4,357,743, Cl. 29-116.0AD.
Straborny, Andrew J. Finger hole insert for bowling balls. 4,358,112, Cl. 273-63.00A.
Strauch, Raymond, to U.S. Philips Corporation. Continuous-wave radar responder having two-position switches. 4,358,763, Cl. 343-55.00W.
Strauss, Georg: *See*—
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,358,312, Cl. 75-58.000.
Strauss, Leopold, to Leigh Products, Inc. Door closer with hold open feature. 4,357,731, Cl. 16-70.000.
Streifer, William: *See*—
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,358,851, Cl. 372-97.000.
Structural Metals, Inc.: *See*—
Elley, Dayton W., 4,357,819, Cl. 72-204.000.
Stucky, James L. Adjustable width trailer. 4,358,133, Cl. 280-656.000.
Stumpp, Gerhard; Wessel, Wolf; Flaig, Ulrich; Piwonka, Fridolin; and Walz, Ludwig, to Robert Bosch GmbH. Apparatus for the adjustment of a quantity-metering member of a fuel injection pump. 4,357,920, Cl. 123-446.000.
Sturmfels, Georg: *See*—
Mayer, Gustav; Hinz, Gerhard; Muhs, Herbert; Sturmfels, Georg; and Burger, Hartmut, 4,358,152, Cl. 296-188.000.
Subtex, Inc.: *See*—
George, Stephen; and George, Thomas, 4,358,500, Cl. 428-246.000.
Suddeutsche Kuhlerfabrik, Julius Fr. Behr GmbH & Co. KG: *See*—
Hauser, Kurt, 4,357,914, Cl. 123-41.490.
Suenaga, Noboru, to Roland Corporation. Guitar synthesizer. 4,357,852, Cl. 84-1.160.
Suga, Toshihisa: *See*—
Matsumoto, Hajime; and Suga, Toshihisa, 4,357,778, Cl. 46-202.000.
Sugasawa, Fukashi; and Iizuka, Haruhiko, to Nissan Motor Company, Limited. Fuel injection control system. 4,357,924, Cl. 123-493.000.
Sugawara, Tamio: *See*—
Igarashi, Kikuo; Honma, Tsunetoshi; and Sugawara, Tamio, 4,358,585, Cl. 536-16.800.
Sugihara, Shigeharu: *See*—
Ota, Akiho; Nishikawa, Masanori; Hattori, Masao; Tsuboi, Akio; Hama, Yoshihisa; Okudaira, Tadashi; and Sugihara, Shigeharu, 4,358,491, Cl. 428-35.000.
Sugino, Takashi; Wada, Masaru; Shimizu, Hirokazu; and Itoh, Kunio, to Matsushita Electric Industrial Co., Ltd. Terraced substrate semiconductor laser. 4,358,850, Cl. 372-45.000.
Sugiura, Shinji: *See*—
Ito, Satoru; Watanabe, Tadashi; and Sugiura, Shinji, 4,358,510, Cl. 428-463.000.
Sugiyama, Hiroshi: *See*—
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Sulzbach, Reinhard A., to Hoechst Aktiengesellschaft. Process for the preparation of pure hexafluoropropylene oxide. 4,358,348, Cl. 203-67.000.
Sumitomo Chemical Company, Limited: *See*—
Sunagawa, Makoto; Sato, Hiromi; Katsube, Junki; and Yamamoto, Hisao, 4,358,620, Cl. 568-439.000.
Sumitomo Metal Industries, Ltd.: *See*—
Tachimoto, Kazuo; and Tanoue, Toyosuke, 4,358,415, Cl. 264-8.000.
Sumitomo Rubber Industries, Ltd.: *See*—
Ohki, Masahiko, 4,358,261, Cl. 425-131.100.
Summers, Christopher P., to U.S. Philips Corporation. Electrical data pulse slicing. 4,358,790, Cl. 358-147.000.
Sunagawa, Makoto; Sato, Hiromi; Katsube, Junki; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. 9-Formyl-9,10-dihydro-9,10-methanoanthracene. 4,358,620, Cl. 568-439.000.
Sunami, Hideo: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Suzuki, Munetoshi; Yamamoto, Hiromasa; and Sakamoto, Gunji, 4,358,093, Cl. 266-103.000.
Sunbelt Communications, Ltd.: *See*—
Moyes, William C.; Gerber, Russell W.; and Ehrbar, Richard, 4,358,277, Cl. 434-322.000.
Sung, Rodney L.: *See*—
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,385, Cl. 252-32.70E.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,386, Cl. 252-32.70E.
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Superior Dairy, Inc.: *See*—
Soehnlen, Joseph A., 4,358,464, Cl. 426-41.000.
Suplinskas, Raymond J.: *See*—
DeBolt, Harold E.; Morrissey, Joseph; and Suplinskas, Raymond J., 4,358,473, Cl. 427-10.000.
Susskind, Alfred K., to Lehigh University. Electrical circuit test apparatus and method. 4,358,847, Cl. 371-25.000.
Sutherland, Peter D.: *See*—
Gadbois, Gerald W.; and Sutherland, Peter D., 4,358,504, Cl. 428-288.000.
Sutrina, Thomas A.; and Behr, R. Douglas, to Dow Chemical Co., The. Forming an integral closure for a thermoplastic container. 4,358,334, Cl. 156-497.000.
Sutton, Richard C.; Brust, David P.; and Hamilton, Lewis R., to Eastman Kodak Company. Polymeric vehicle for metallizable dye image-receiving layer. 4,358,524, Cl. 430-213.000.
Sutton, Richard F., Jr., to Du Pont de Nemours, E. I., and Company. Polyimide manufacture. 4,358,581, Cl. 528-353.000.
Suzuki, Etsuo: *See*—
Kurakami, Naoki; Takahashi, Tetsuya; and Suzuki, Etsuo, 4,358,794, Cl. 358-293.000.
Suzuki, Kunihiko: *See*—
Naganoma, Masanori; Kondo, Nobuo; Senda, Eiichi; Hibi, Hitoshi; Suzuki, Kunihiko; Ohta, Nobuyoshi; and Ito, Katsunori, 4,358,050, Cl. 236-13.000.
Suzuki, Munetoshi: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Suzuki, Munetoshi; Yamamoto, Hiromasa; and Sakamoto, Gunji, 4,358,093, Cl. 266-103.000.
Suzuki, Toshitsugu; and Tuchida, Masayuki, to Hitachi, Ltd.; and Tokico, Ltd. Oil cooled compressor. 4,358,247, Cl. 417-13.000.
Sveen, Finn: *See*—
Ellestad, Raymond A.; and Sveen, Finn, 4,357,936, Cl. 128-204.230.
Sveinsbo, Gunnar; and Gismervik, Jan E. Apparatus for warning of the increase in draught of a floating article, especially a small boat, in a surrounding liquid. 4,357,892, Cl. 114-270.000.
Svensk Ideutveckling AB Dag Bille: *See*—
Bille, Dag, 4,358,777, Cl. 346-82.000.
Svensson, Stig-Ake, to Scal Sweden AB. Lifting device for container. 4,358,145, Cl. 294-81.0SF.
Sweeney, Gerald T., to Tigre Tierra, Inc. Fluid pressurization apparatus and technique. 4,357,992, Cl. 166-250.000.
Sweeney, James S., Jr., to Lifecycle, Inc. Programmed exerciser apparatus and method. 4,358,105, Cl. 272-73.000.
Swenson, Richard C., to United States of America, Navy. Self-deploying buoy system. 4,358,834, Cl. 367-4.000.

Swithenbank, Colin, to Rohm and Haas Company. Herbicidal 4-perfluoroacetyl-, 4-perfluoromethylthio-, 4-perfluoromethylsulfinyl-, and 4-perfluoromethylsulfonyl-4'-nitrodiphenyl ethers. 4,358,308, Cl. 71-98.000.

Sybron Corporation: *See—*
Schmidt, Manfred, 4,358,270, Cl. 433-78.000.

Syntex (U.S.A.) Inc.: *See—*
Yu, Cheng-Der, 4,358,603, Cl. 560-2.000.

Synthelabo: *See—*
Koletar, Gabor I.; Frost, Jonathan R.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,358,451, Cl. 424-251.000.

Szasz, Karoly; and Meszaros, Sandor, to Medicor Muvek. X-ray photographing and developing apparatus. 4,358,855, Cl. 378-99.000.

T.A.D. Avanti, Inc.: *See—*
Martinez, Arthur T., 4,358,646, Cl. 200-5.00R.

Tabak, Samuel A.: *See—*
Smith, Fritz A.; and Tabak, Samuel A., 4,358,362, Cl. 208-91.000.

Tachimoto, Kazuo; and Tanoue, Toyosuke, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Sumitomo Metal Industries, Ltd. Method for producing granules from molten metallurgical slags. 4,358,415, Cl. 264-8.000.

Tada, Masahiro; Ichikawa, Hirokazu; Fukushima, Mitsuo; Nakamichi, Koya; Ouchi, Koji; and Ishigaki, Yoshio, to Sony Corporation. Loop antenna apparatus with variable directivity. 4,358,769, Cl. 343-742.000.

Tahara, Yasuteru; and Koike, Kazuyoshi, to Mitsubishi Rayon Company, Ltd. Method of detecting pinholes in hollow fibers. 4,357,826, Cl. 73-37.700.

Tajima, Hiroaki: *See—*
Tamura, Koichiro; Tajima, Hiroaki; Okada, Yoshikuni; and Umeyama, Shinji, 4,358,858, Cl. 455-607.000.

Takagi, Yoshihiro; and Hayashi, Katsumi, to Fuji Photo Film Co., Ltd. Formation of black-and-white silver-containing negative images by a diffusion transfer process. 4,358,528, Cl. 430-251.000.

Takahashi, Tetsuya: *See—*
Kurakami, Naoki; Takahashi, Tetsuya; and Suzuki, Etsuo, 4,358,794, Cl. 358-293.000.

Takasuka, Kaoru; Arakawa, Tatsumi; Matushita, Fumio; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Semiconductor device. 4,358,782, Cl. 357-2.000.

Takeda Chemical Industries, Ltd.: *See—*
Fujino, Masahiko; Wakimasu, Mitsuhiro; and Kitada, Chieko, 4,358,440, Cl. 424-177.000.
Maki, Yoshitaka; Terao, Shinji; and Watanabe, Masazumi, 4,358,461, Cl. 424-331.000.

Takeda, Fumio: *See—*
Satoh, Toshio; Mizusawa, Motoo; and Takeda, Fumio, 4,358,770, Cl. 343-786.000.

Takeda, Masahisa, to Ozeki Sake Brewing Co., Ltd. Process of brewing an alcoholic beverage from rice. 4,358,462, Cl. 426-13.000.

Takegawa, Tetuo; Kikuchi, Yoichi; and Mizusawa, Akira, to Nissan Motor Co., Ltd.; and Nifco Inc. Part fixing system. 4,358,234, Cl. 411-57.000.

Takei, Toshihiro: *See—*
Tsuge, Noboru; Kuwakado, Satosi; Shimogawa, Toshiaki; and Takei, Toshihiro, 4,358,136, Cl. 280-806.000.

Takematsu, Tetsuo; Takeuchi, Masaki; Okada, Masanori; Sugiyama, Hiroshi; and Murakami, Yasushi, to Chugai Seiyaku Kabushiki Kaisha. Urea derivatives and highly selective herbicidal compositions containing the same. 4,358,309, Cl. 71-120.000.

Takenouchi, Mutsuo: *See—*
Fuse, Mario; and Takenouchi, Mutsuo, 4,358,478, Cl. 427-76.000.

Takeuchi, Masaki: *See—*
Takematsu, Tetsuo; Takeuchi, Masaki; Okada, Masanori; Sugiyama, Hiroshi; and Murakami, Yasushi, 4,358,309, Cl. 71-120.000.

Takeuchi, Tetsuo; and Nakamura, Shoichi, to Ichikawa Woolen Textile Co., Ltd. Sludge condensation and dewatering system. 4,358,381, Cl. 210-727.000.

Takeuchi, Tomio: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; Kondo, Shinichi; and Ishizuka, Masaaki, 4,358,602, Cl. 549-328.000.

Takigami, Katsuhiko; and Azuma, Makoto, to Tokyo Shibaura Denki Kabushiki Kaisha. Compression type semiconductor device. 4,358,785, Cl. 357-79.000.

Talanda, Milan, to Vitkovice, Unicovske strojirny, koncernovy podnik. Device for the removal of waste products created during the thermal separation of material. 4,358,091, Cl. 266-49.000.

Tallent, Othar K.; Crouse, David J.; and Mailen, James C., to United States of America, Energy. Method for cleaning solution used in nuclear fuel reprocessing. 4,358,426, Cl. 423-10.000.

Tamada, Haruo; and Kudo, Osamu, to Fujitsu Limited. Analog-to-digital converter. 4,358,752, Cl. 340-347.0AD.

Tamii, Seizo, to Mitsubishi Denki Kabushiki Kaisha. Controllable voltage converter system having a high switching speed. 4,358,688, Cl. 307-77.000.

Tamura, Koichiro; Tajima, Hiroaki; Okada, Yoshikuni; and Umeyama, Shinji, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Optical information exchange system. 4,358,858, Cl. 455-607.000.

Tanaka, Eiichi; Furumai, Koro; Indo, Masahiro; and Kawabata, Norio, to Matsushita Electric Industrial Co., Ltd. Combustion appliance with a safety device. 4,358,265, Cl. 431-76.000.

Tanaka, Hiroyuki; Aosai, Fumito; Kido, Koichiro; and Yamamoto, Shogo, to Mitsubishi Rayon Co., Ltd. Process for forming coating film. 4,358,508, Cl. 428-458.000.

Tanaka, Katsuyuki: *See—*
Tsuge, Noboru; Kuwakado, Satosi; Tanaka, Katsuyuki; and Shimogawa, Toshiaki, 4,358,135, Cl. 280-806.000.

Tanaka, Kazuo: *See—*
Nakano, Shiro; Naito, Yoshiro; Nakamura, Shigeki; Ikena, Tosimasa; and Tanaka, Kazuo, 4,358,474, Cl. 427-12.000.

Tanaka, Kimio: *See—*
Okamura, Masatoshi; and Tanaka, Kimio, 4,358,070, Cl. 242-197.000.

Tanaka, Masato: *See—*
Ichikawa, Shunsuke; and Tanaka, Masato, 4,358,852, Cl. 375-25.000.

Tanaka, Yoko: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,358,406, Cl. 260-239.55R.

Tanaka, Yukiyasu: *See—*
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,357,916, Cl. 123-51.0BA.

Tanoue, Toyosuke: *See—*
Tachimoto, Kazuo; and Tanoue, Toyosuke, 4,358,415, Cl. 264-8.000.

Tao, John C.: *See—*
Klosek, Joseph; and Tao, John C., 4,358,364, Cl. 208-92.000.

Tartaglio, Robert L.: *See—*
Dinges, Frank; and Tartaglio, Robert L., 4,358,715, Cl. 315-292.000.

Tate, James H.: *See—*
Schweitzer, Robert A.; and Tate, James H., 4,357,948, Cl. 131-173.000.

Tauber, Manfred: *See—*
Schmidt, Eckehard; Rusch, Dieter; and Tauber, Manfred, 4,358,331, Cl. 156-275.500.

Taylor, Dennis O.: *See—*
Reid, David L.; Taylor, Dennis O.; and Brott, Donald J., 4,358,828, Cl. 364-565.000.

Taylor, John C. Water-boiling container with switch-on-dry and steam sensitive thermally responsive control units. 4,358,666, Cl. 219-330.000.

TDK Electronics Co., Ltd.: *See—*
Okamura, Masatoshi; and Tanaka, Kimio, 4,358,070, Cl. 242-197.000.
Okamura, Masatoshi, 4,358,071, Cl. 242-199.000.

Tecumseh Products Company: *See—*
Campen, Kenneth W., 4,358,727, Cl. 322-90.000.
Gannaway, Edwin L., 4,358,251, Cl. 417-319.000.
Hannibal, Billy B., 4,358,254, Cl. 417-419.000.

Teledyne Adams: *See—*
Knecht, Helmut, 4,357,952, Cl. 137-15.000.

Teledyne Industries, Inc.: *See—*
Conrad, Richard A., 4,358,173, Cl. 339-17.0CF.

TeleMine Company, Inc., The: *See—*
Hyatt, Robert K.; and Jacobs, Robert F., 4,358,672, Cl. 235-380.000.

Teletype Corporation: *See—*
Ollendick, Gary B., 4,358,690, Cl. 307-359.000.

Telfer, Alexander; and McMillan, Dale H., to Shell Oil Company. Neutron interface detector. 4,358,682, Cl. 250-357.100.

Temple, Chester, to PPG Industries, Inc. Storage stable polyolefin compatible size for fiber glass strands. 4,358,501, Cl. 428-268.000.

Tenco Machinery Ltd.: *See—*
Croteau, Lucien; Marchand, Alain; and Houle, Bertrand, 4,357,766, Cl. 37-281.000.

Ten Haken, Pieter; and Webb, Shirley B., to Shell Oil Company. Use as fungicides of N-(3-pyridylmethyl)-N-acyl anilines. 4,358,446, Cl. 424-245.000.

Terao, Shinji: *See—*
Maki, Yoshitaka; Terao, Shinji; and Watanabe, Masazumi, 4,358,461, Cl. 424-331.000.

Ternai, Bela: *See—*
Ghosh, Peter; Ternai, Bela; and Whitehouse, M. W., 4,358,595, Cl. 548-126.000.

Terrill, David B.: *See—*
Shaw, Wilfrid G.; Terrill, David B.; and Woodbury, David R., 4,358,608, Cl. 562-534.000.

Terumo Corporation: *See—*
Moriuchi, Yousuke; and Shimizu, Atsushi, 4,358,376, Cl. 210-282.000.

Tetreault, Tommy M.: *See—*
Kern, James W.; and Tetreault, Tommy M., 4,358,485, Cl. 427-376.800.

Texaco Development Corporation: *See—*
Burns, Robert B., 4,358,219, Cl. 405-60.000.

Texaco Inc.: *See—*
Cuscurida, Michael; and Dominquez, Richard J. G., 4,358,547, Cl. 521-126.000.
Graham, William J., 4,358,218, Cl. 405-60.000.
Holzle, Ross G., 4,357,989, Cl. 165-45.000.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,385, Cl. 252-32.70E.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,386, Cl. 252-32.70E.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., 4,358,387, Cl. 252-33.400.

Texas Instruments Incorporated: *See—*
Fu, Horng-Sen, 4,358,340, Cl. 156-643.000.
Hart, Patrick J., 4,358,729, Cl. 323-322.000.
Thalmann, Dieter: *See—*
Schwander, Andreas; and Thalmann, Dieter, 4,358,065, Cl. 242-18.0PW.
THAT Distributing Company, Inc.: *See—*
Held, Edward J.; and Broder, Daniel, 4,357,809, Cl. 62-457.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Mobile arrangement and method for improving a track bed. 4,357,874, Cl. 104-2.000.
Thiele, Duane L., to J. I. Case Company. Apparatus for aligning trolleys. 4,358,020, Cl. 212-147.000.
Thomas & Betts Corporation: *See—*
Dienes, Zoltan B., 4,358,634, Cl. 174-88.00R.
Narozny, Ronald S., 4,358,172, Cl. 339-17.00F.
Netta, Louis A.; and Hidassy, Laszlo, 4,357,970, Cl. 140-123.600.
Peterpaul, Joseph, 4,357,969, Cl. 140-123.600.
Thomas, Joris J. Tractor with a built-on underframe for a tilling machine with arm. 4,358,129, Cl. 280-473.000.
Thompson, David L.; Hartlaub, Jerome T.; and Stein, Marc T., to Medtronic, Inc. Demand cardiac pacemaker having reduced polarity disparity. 4,357,943, Cl. 128-419.0PG.
Thompson, David M.: *See—*
Kukucka, William P.; Hynes, Frank R.; Jones, Hugh L.; and Thompson, David M., 4,358,197, Cl. 355-14.00R.
Thompson, Martin S., to Egerton Hospital Equipment Limited. Bed with adjustably tensionable patient supporting net. 4,357,722, Cl. 5-62.000.
Thomson-Brandt: *See—*
Oprandi, Pierre; and Romeas, Rene, 4,358,787, Cl. 358-14.000.
Thomson-CSF: *See—*
Delory, Bernard; Euloge, Gerard; and Fleury, Georges, 4,358,707, Cl. 315-5.380.
Nazet, Rene; and Ribout, Pierre, 4,358,706, Cl. 315-5.380.
Tikes, Jacques, 4,358,744, Cl. 333-33.000.
Thorsson, Conny R.; and Viira, Indrek J., to Alfa-Laval AB. Production of ethanol. 4,358,536, Cl. 435-161.000.
Thorwart, Werner: *See—*
Gebert, Ulrich; Granzer, Ernold; Greve, Heinz-Gunter; and Thorwart, Werner, 4,358,450, Cl. 424-250.000.
Tigre Tierra, Inc.: *See—*
Sweeney, Gerald T., 4,357,992, Cl. 166-250.000.
Tikes, Jacques, to Thomson-CSF. Impedance matched dielectric window. 4,358,744, Cl. 333-33.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Okumura, Yoshiharu; Sakakibara, Tadamori; and Kaneko, Katsumi, 4,358,626, Cl. 568-899.000.
Sakakibara, Tadamori; Matsushima, Yoshihisa; and Kaneko, Katsumi, 4,358,621, Cl. 568-454.000.
Tobinaga, Takeshi, to Mitsubishi Petrochemical Company Limited. Binder composition for foundry sand molds. 4,358,570, Cl. 525-456.000.
Todoroff, David M.: *See—*
Demler, Walter R.; and Todoroff, David M., 4,358,410, Cl. 260-507.00R.
Tohyama, Nobuo; Yoshida, Junichi; Yamano, Shozo; and Kamiya, Kenji, to Ricoh Watch Co., Ltd. Electronic watch with an automatic time indication modifier. 4,358,836, Cl. 368-47.000.
Tokico, Ltd.: *See—*
Suzuki, Toshitsugu; and Tuchida, Masayuki, 4,358,247, Cl. 417-13.000.
Tokitou, Kouji; and Wada, Tsuneo, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,358,533, Cl. 430-512.000.
Tokyo Rokuon Kogyo Kabushiki Kaisha: *See—*
Uehara, Zenshiro, 4,358,804, Cl. 360-105.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hosaka, Yasuo; and Yana, Masasumi, 4,358,793, Cl. 358-286.000.
Takigami, Katsuhiko; and Azuma, Makoto, 4,358,785, Cl. 357-79.000.
Tolliver, Wilbur E. Pipe reinforcing fabric. 4,358,078, Cl. 245-2.000.
Tompkins, James D., to International Business Machines Corporation. Self-biasing circuit for analog shift registers, with fat zero compensation. 4,358,831, Cl. 365-183.000.
Topper Manufacturing Corporation: *See—*
Schmidt, Detlef E., 4,358,184, Cl. 353-119.000.
Toray Industries Incorporated: *See—*
Fujita, Takashi; and Iwamoto, Masao, 4,358,522, Cl. 430-166.000.
Torii, Osamu: *See—*
Hashimoto, Yasuyuki; and Torii, Osamu, 4,358,210, Cl. 401-65.000.
Toro Company, The: *See—*
Hunter, Edwin J., 4,357,954, Cl. 137-218.000.
Torrington Company, The: *See—*
Magazian, Harry; Gabrielson, Alan L.; and Cowles, John H., 4,358,167, Cl. 308-78.000.
Toshiba Silicones Ltd.: *See—*
Shimizu, Chiyuki, 4,358,558, Cl. 524-379.000.
Toth, Istvan J.: *See—*
Derkacs, Thomas; Fetheroff, Charles W.; Matay, Istvan M.; and Toth, Istvan J., 4,358,471, Cl. 427-9.000.
Tottori Sanyo Electric Co., Ltd.: *See—*
Iwasaki, Shoji, 4,358,761, Cl. 340-792.000.
Toybox Corporation: *See—*
Matsumoto, Hajime; and Suga, Toshihisa, 4,357,778, Cl. 46-202.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Ota, Akiho; Nishikawa, Masanori; Hattori, Masao; Tsuboi, Akio; Hama, Yoshihisa; Okudaira, Tadashi; and Sugihara, Shigeharu, 4,358,491, Cl. 428-35.000.
Toyo Chemical Co., Ltd.: *See—*
Akimoto, Saburo; Maruchi, Sachio; Fukaya, Masahiro; Shibano, Tomishi; Chimura, Ippei; Asakura, Hiroshi; Kitazume, Keisuke; and Fuse, Shiro, 4,358,494, Cl. 428-40.000.
Toyo Ink Manufacturing Co., Ltd.: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; and Sakai, Hiromu, 4,358,493, Cl. 428-35.000.
Toyo Kogyo Co., Ltd.: *See—*
Morita, Yasuyuki, 4,358,259, Cl. 418-122.000.
Ohya, Takeji; and Maeda, Tatuo, 4,357,781, Cl. 49-227.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nakano, Jiro, 4,357,828, Cl. 73-117.300.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,357,916, Cl. 123-51.0BA.
Okano, Hiroshi; and Yamazaki, Masami, 4,358,253, Cl. 417-407.000.
Yamamoto, Toshiaki, 4,358,282, Cl. 464-139.000.
Tricot, Marc, deceased: *See—*
Daniel, Jean-Claude; Schuppiser, Jean-Luc; and Tricot, Marc, deceased, 4,358,388, Cl. 252-62.540.
Tricot, Nicole, heir: *See—*
Daniel, Jean-Claude; Schuppiser, Jean-Luc; and Tricot, Marc, deceased, 4,358,388, Cl. 252-62.540.
Trimmer, Paul A., to Amerace Corporation. Method of making self-locking nut. 4,357,726, Cl. 10-86.00A.
Trutzschler GmbH & Co. KG: *See—*
Marx, Hans-Jurgen, 4,357,737, Cl. 19-80.00R.
TRW Inc.: *See—*
Derkacs, Thomas; Fetheroff, Charles W.; Matay, Istvan M.; and Toth, Istvan J., 4,358,471, Cl. 427-9.000.
McDonald, John C.; and Baichtal, James R., 4,358,823, Cl. 364-200.000.
Tsuboi, Akio: *See—*
Ota, Akiho; Nishikawa, Masanori; Hattori, Masao; Tsuboi, Akio; Hama, Yoshihisa; Okudaira, Tadashi; and Sugihara, Shigeharu, 4,358,491, Cl. 428-35.000.
Tsuge, Noboru; Kuwakado, Satosi; Tanaka, Katsuyuki; and Shimogawa, Toshiaki, to Nippon Soken, Inc. Connector for igniting circuit of priming device. 4,358,135, Cl. 280-806.000.
Tsuge, Noboru; Kuwakado, Satosi; Shimogawa, Toshiaki; and Takei, Toshihiro, to Nippon Soken, Inc. Energy absorbing device for use with vehicular seat belt. 4,358,136, Cl. 280-806.000.
Tuchida, Masayuki: *See—*
Suzuki, Toshitsugu; and Tuchida, Masayuki, 4,358,247, Cl. 417-13.000.
Tunick, Allen A.: *See—*
Sifniades, Stylianos; Tunick, Allen A.; and Koff, Fred W., 4,358,618, Cl. 568-385.000.
Tupper, Alan W. Sail handling apparatus. 4,357,889, Cl. 114-114.000.
Turchetti, Gianni: *See—*
Mezzanotte, Mario; and Turchetti, Gianni, 4,357,976, Cl. 152-354.0RB.
Tyler, Derek E.: *See—*
Yarwood, John C.; Pryor, Michael J.; and Tyler, Derek E., 4,358,416, Cl. 264-22.000.
Tyros, James C. Method and apparatus for picking olives or other fruits. 4,357,790, Cl. 56-328.00R.
Tzodikov, Nathan R.; and O'Brien, Robert E., to New England Nuclear Corporation. Method, composition and kit for stabilizing radiolabeled compounds. 4,358,434, Cl. 424-1.000.
Uchidoi, Masanori; and Ito, Tadashi, to Canon Kabushiki Kaisha. Camera having program shutter. 4,358,188, Cl. 354-38.000.
Uehara, Zenshiro, to Tokyo Rokuon Kogyo Kabushiki Kaisha. Controllable drive for tape recorder. 4,358,804, Cl. 360-105.000.
Umeyama, Shinji: *See—*
Tamura, Koichiro; Tajima, Hiroaki; Okada, Yoshikuni; and Umeyama, Shinji, 4,358,858, Cl. 455-607.000.
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; Kondo, Shinichi; and Ishizuka, Masaaki, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kao. Ebelactones and production thereof. 4,358,602, Cl. 549-328.000.
Unarco Industries, Inc.: *See—*
Schneider, Jerry M.; and Coules, Ronald A., 4,358,162, Cl. 301-63.00R.
Underwood, J. Larry. Container closure. 4,358,024, Cl. 220-234.000.
Union Carbide Corporation: *See—*
Detz, Clifford M.; and Lightstone, John B., 4,358,046, Cl. 228-176.000.
Kern, James W.; and Tetreault, Tommy M., 4,358,485, Cl. 427-376.800.
Union Oil Company of California: *See—*
Showalter, William E., 4,358,157, Cl. 299-4.000.
Showalter, William E., 4,358,158, Cl. 299-4.000.
Union Siderurgique du Nord et de l'Est de la France: *See—*
Brun, Charles, 4,358,267, Cl. 432-59.000.
Uniroyal, Inc.: *See—*
Chlebowski, Edmund M., 4,357,745, Cl. 29-460.000.
United States of America
Air Force: *See—*
Ellis, Stanley H., 4,357,796, Cl. 60-262.000.
Army: *See—*
Scully, Andrew J., 4,358,134, Cl. 280-676.000.
Energy: *See—*

Byrne, Martin A.; and Lupinski, John H., 4,358,419, Cl. 264-111.000.
Hanson, Clark L., 4,358,249, Cl. 417-179.000.
Kaun, Thomas D., 4,358,513, Cl. 429-103.000.
Liu, Kindtoken H. D.; and Hamrin, Charles E., Jr., 4,358,398, Cl. 252-440.000.
Mendelsohn, Marshall H.; and Gruen, Dieter M., 4,358,429, Cl. 423-248.000.
Praeg, Walter F., 4,358,808, Cl. 361-11.000.
Tallent, Othar K.; Crouse, David J.; and Mailen, James C., 4,358,426, Cl. 423-10.000.
Van Blarigan, Peter; and Haupt, David L., 4,358,658, Cl. 219-121.0LC.

Interior: *See—*
Kissell, Fred N.; Muldoon, Terry L.; Schroeder, William E., Jr.; and Peterson, Carl R., 4,358,160, Cl. 299-43.000.

National Aeronautics and Space Administration: *See—*
Ecord, Glenn M.; and Schomburg, Calvin, 4,358,480, Cl. 427-140.000.
Ecord, Glenn M.; and Schomburg, Calvin, 4,358,486, Cl. 427-379.000.
Morgan, Larry E., 4,358,846, Cl. 371-6.000.
Rhodes, Percy H., 4,358,358, Cl. 204-299.00R.

Navy: *See—*
Merz, Paul L., 4,357,855, Cl. 89-1.816.
Reed, Russell, Jr.; Lee, Benjamin Y. S.; and Henry, Ronald A., 4,358,327, Cl. 149-19.400.
Swenson, Richard C., 4,358,834, Cl. 367-4.000.
Wood, Stanley E.; and Bryant, James T., 4,357,856, Cl. 89-7.000.

U.S. Philips Corporation: *See—*
Bex, Hans, 4,358,711, Cl. 315-208.000.
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Young, Raymond R.; and Buck, Donald F., 4,358,754, Cl. 340-815.170.

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vom Dorp, Heinz: *See—*
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Weber, Russell S.; Miller, Thomas H.; and von den Stemmen, Alfons, 4,358,424, Cl. 422-68.000.
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Vos, Jan, to U.S. Philips Corporation. Hot-gas reciprocating machine. 4,357,799, Cl. 60-518.000.
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Holdsworth, Robert S., 4,357,759, Cl. 34-9.000.
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Wagensonner, Eduard: *See—*
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Wahl, Edward F., III, to Occidental Research Corporation. Removal of carbon dioxide in geothermal power systems. 4,357,801, Cl. 60-641.300.
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Waldock, George R.: *See—*
Pierce, Charles F. E.; Waldock, George R.; and Woolford, Noel J., 4,358,063, Cl. 242-7.030.
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Walker, S. David, to Satellite Balloon Manufacturing Co. Inflatable ornament. 4,358,487, Cl. 428-11.000.
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Wallace, Lloyd F., to RCA Corporation. Low cost reduced blooming device and method for making the same. 4,358,323, Cl. 148-1.500.
Wallsten, Hans I., to Inventing S.A. Method and apparatus for coating both sides of a moving web. 4,358,481, Cl. 427-211.000.
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Chen, Nai Y.; and Walsh, Dennis E., 4,358,290, Cl. 44-1.00F.
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Ward, Terence J., to John Wyeth & Brother Limited. Antipsychotic piperidinomethyl-indole derivatives. 4,358,456, Cl. 424-267.000.
Warner, Richard C., to Singer Company, The. Minimized magnetic core memory driver system. 4,358,832, Cl. 365-196.000.
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Goldberg, Paul R.; and Doward, Colin J., 4,358,192, Cl. 354-299.000.
Webb, Shirley B.: *See—*
Ten Haken, Pieter; and Webb, Shirley B., 4,358,446, Cl. 424-245.000.
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Weber, Hans B., to Midland-Ross Corporation. Bolster for a railroad car truck. 4,357,880, Cl. 105-206.00R.
Weber, Russell S.; Miller, Thomas H.; and von den Stemmen, Alfons, to R. S. Weber, Inc. Equilibrating instrument for preparing quality control solutions. 4,358,424, Cl. 422-68.000.
Webster, James B. Vehicle alarm system having a vibration-sensitive motion detector. 4,358,750, Cl. 340-65.000.
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Wedemeyer, Karlfried; and Fiege, Helmut, to Bayer Aktiengesellschaft. Process for the preparation of alkylthiomethylphenols and arylthiomethylphenols. 4,358,616, Cl. 568-45.000.
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Wei, Yun-Song. Tilted lifters for autogenous mills. 4,358,062, Cl. 241-284.000.
Weigel, Horst; and Melcher, Gerhard, to Klockner-Humboldt-Deutz AG. Method and apparatus for the smelting of material such as ore concentrates. 4,358,311, Cl. 75-26.000.
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Weiss, Hans-Joachim, to Rieter Machine Works, Ltd. Thread retainer. 4,358,068, Cl. 242-131.000.
Weiss, Martin J.: *See—*
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Welbon, Harold. Unidirectional drive hand operated wrench. 4,357,844, Cl. 81-57.390.
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Westergaard, Robert K.: *See—*
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Guy, Rodney J., 4,358,178, Cl. 339-103.00R.
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Westguard Products, Inc.: *See—*
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Kappenhagen, George A., 4,357,995, Cl. 187-17.000.
Miller, Coleman J.; and Conn, James K., 4,358,746, Cl. 333-261.000.
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Rosa, John, 4,358,818, Cl. 363-46.000.
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Vander Molen, Donald R.; and Nyland, Roger L., 4,357,729, Cl. 15-319.000.

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Whitney & Company, Inc.: *See—*
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Whittemore, John P.: *See—*
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Whitton, Jonathan R.: *See—*
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Wicki, Heinz; and Vogel, Claude, to Sandoz Ltd. Asymmetric 1:2 metal complexes of diazo compounds. 4,358,287, Cl. 8-540.000.

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Heymanns, Lothar; and vom Dorp, Heinz, 4,358,122, Cl. 279-2.00A.

Wilkinson, Richard L., to Discovision Associates. Apparatus and method for controlling focus in a recording system. 4,358,774, Cl. 346-1.100.

Wilkinson, William V. Cup lid piercing apparatus. 4,357,753, Cl. 30-443.000.

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Williams, Stanley E., to George Koch Sons, Inc. Method and apparatus for making floral baskets. 4,357,966, Cl. 140-71.00R.

Williamsburg Steel Products Co. Inc.: *See—*
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Williamson, Joseph R.: *See—*
Johannesen, Donald D.; and Williamson, Joseph R., 4,358,003, Cl. 188-73.430.

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Winburn, Charles F.; Craft, William K.; Keferl, Gregory T.; Scheele, Wilfred; and Baker, Juanita, to Batesville Casket Company, Inc. Removable panel for a casket lid. 4,357,741, Cl. 27-19.000.

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Winter, Gerhard: *See—*
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Winzeler, James E., to Caterpillar Tractor Co. Multi-speed planetary differential. 4,357,840, Cl. 74-682.000.

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DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,358,406, Cl. 260-239.55R.

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Wittenberger, John C.: *See—*
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Wolker, Gunter, to Raymond, A. Fastener clip for detachably securing functional components to threaded pins fixed to a support plate. 4,358,080, Cl. 248-68.00R.

Wolper, Stanley M.: *See—*
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Wolpert, George H., Jr.: *See—*
Wolpert, Kenneth R.; and Wolpert, George H., Jr., 4,357,931, Cl. 126-247.000.

Wolpert, Kenneth R.; and Wolpert, George H., Jr. Flameless heat source. 4,357,931, Cl. 126-247.000.

Wolters, Egbert: *See—*
Noomen, Aric; Mostert, Johannes; and Wolters, Egbert, 4,358,477, Cl. 427-54.100.

Wood, Herman C. Hinged rear window. 4,358,151, Cl. 296-146.000.

Wood, Stanley D., to Allied Corporation. Filter pack. 4,358,375, Cl. 210-266.000.

Wood, Stanley E.; and Bryant, James T., to United States of America, Navy. Propellant for liquid propellant gun. 4,357,856, Cl. 89-7.000.

Woodall, Jerry M.: *See—*
Cuomo, Jerome J.; and Woodall, Jerry M., 4,358,291, Cl. 44-3.00B.

Woodbury, David R.: *See—*
Shaw, Wilfrid G.; Terrill, David B.; and Woodbury, David R., 4,358,608, Cl. 562-534.000.

Woodley, David R.: *See—*
Schoen, Allen H.; Schneider, John J.; Bevan, David; Rosenstein, Harold; and Woodley, David R., 4,358,074, Cl. 244-12.400.

Woodruff, Frank, to Bendix Corporation, The. Distributor injection pump for diesel engines. 4,357,925, Cl. 123-506.000.

Woodward, William R. Winch-mounted sailboat oarlock. 4,358,281, Cl. 440-109.000.

Woolford, Noel J.: *See—*
Pierce, Charles F. E.; Waldock, George R.; and Woolford, Noel J., 4,358,063, Cl. 242-7.030.

Wottreng, Andrew H.: *See—*
Bodner, Ronald E.; Crooks, Thomas L.; and Wottreng, Andrew H., 4,358,826, Cl. 364-200.000.

Wovcha, Merle G.; and Brooks, Kevin E., to Upjohn Company, The. Mycobacterium fortuitum mutant. 4,358,538, Cl. 435-253.000.

Wurtz, Frank R. Perspective drawing machine. 4,357,757, Cl. 33-434.000.

Xerox Corporation: *See—*
Kukucka, William P.; Hynes, Frank R.; Jones, Hugh L.; and Thompson, David M., 4,358,197, Cl. 355-14.00R.
Lawrence, Brian R., 4,358,042, Cl. 227-152.000.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,358,851, Cl. 372-97.000.
Stokes, Ronald E., 4,358,040, Cl. 227-5.000.

Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Fukuda, Kazushige, to Kurosaki Refractories, Co., Ltd.; and Seishi Yajima. Organometallic polymer and process for production thereof. 4,358,576, Cl. 528-30.000.

Yakabe, Masamori: *See—*
Kosuge, Yasuo; Yakabe, Masamori; Oga, Tadanori; and Maeda, Toru, 4,357,965, Cl. 140-2.000.

Yamada, Kikuo; and Onodera, Kiyoshi, to MacGregor International S.A. Apparatus for opening and closing hatch cover. 4,357,982, Cl. 160-188.000.

Yamada, Motoyuki: *See—*
Okamoto, Haruo; and Yamada, Motoyuki, 4,358,306, Cl. 65-32.000.

Yamagata University: *See—*
Hsieh, Kou-Chang, 4,358,771, Cl. 343-854.000.

Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Knock detecting apparatus for internal combustion engines. 4,357,825, Cl. 73-35.000.

Yamaguchi, Hiroaki: *See—*
Hattori, Tadashi; Yamaguchi, Hiroaki; and Ootsuka, Yoshinori, 4,357,919, Cl. 123-425.000.

Yamaguchi, Jun: *See—*
Sasaki, Noboru; Sera, Hidefumi; Ohki, Nobutaka; and Yamaguchi, Jun, 4,358,534, Cl. 430-537.000.

Yamamori, Kiyoshi; Miura, Masayoshi; and Mizoguchi, Akira, to Matsushita Electric Industrial Company, Limited. Ink jet writing head with spacer in capillary chamber. 4,358,781, Cl. 346-140.00R.

Yamamoto, Haruo, to Casio Computer Co., Ltd. Electronic self-study device. 4,358,273, Cl. 434-201.000.

Yamamoto, Hiromasa: *See—*
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Suzuki, Munetoshi; Yamamoto, Hiromasa; and Sakamoto, Gunji, 4,358,093, Cl. 266-103.000.

Yamamoto, Hisao: *See—*
Sunagawa, Makoto; Sato, Hiromi; Katsube, Junki; and Yamamoto, Hisao, 4,358,620, Cl. 568-439.000.

Yamamoto, Masahiko; Nishino, Yoshinori; Wada, Masao; and Ebisu, Tomio, to Hitachi Shipbuilding & Engineering Company Limited. Centrifugal molding apparatus for manufacturing composite material pipes. 4,358,264, Cl. 425-425.000.

Yamamoto, Shogo: *See—*
Tanaka, Hiroyuki; Aosai, Fumito; Kido, Koichiro; and Yamamoto, Shogo, 4,358,508, Cl. 428-458.000.

Yamamoto, Toshiaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Constant velocity ball joint. 4,358,282, Cl. 464-139.000.

Yamanaka, Takashi: *See—*
Kurakami, Osamu; Koshimaru, Shigeru; and Yamanaka, Takashi, 4,357,747, Cl. 29-571.000.

Yamano, Shozo: *See—*
Tohyama, Nobuo; Yoshida, Junichi; Yamano, Shozo; and Kamiya, Kenji, 4,358,836, Cl. 368-47.000.

Yamasaki, Harumasa: *See—*
Ito, Osamu; Yamasaki, Harumasa; and Nishizawa, Kazunori, 4,357,938, Cl. 128-287.000.

Yamashita, Toshio: *See*—
Gamo, Takaharu; Moriwaki, Yoshio; and Yamashita, Toshio, 4,358,432, Cl. 423-644.000.
Yamazaki, Masami: *See*—
Okano, Hiroshi; and Yamazaki, Masami, 4,358,253, Cl. 417-407.000.
Yamazaki, Suguru; and Saito, Tadamori, to Kabushiki Kaisha Suwa Seikosha. Time correcting method. 4,358,837, Cl. 368-69.000.
Yan, Tsoung Y.; and Audeh, Costandi A., to Mobil Oil Corporation. Process for repairing asphalt pavement. 4,358,554, Cl. 524-69.000.
Yana, Masasumi: *See*—
Hosaka, Yasuo; and Yana, Masasumi, 4,358,793, Cl. 358-286.000.
Yanagishima, Fumiya: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Suzuki, Munetoshi; Yamamoto, Hiromasa; and Sakamoto, Gunji, 4,358,093, Cl. 266-103.000.
Yarwood, John C.; Pryor, Michael J.; and Tyler, Derek E., to Olin Corporation. Apparatus and process for cooling and solidifying molten material being electromagnetically cast. 4,358,416, Cl. 264-22.000.
Yazidjian, Jean-Claude, to Framatome. Steam generator with pre-heating. 4,357,908, Cl. 122-32.000.
Yeaton, Robert G.: *See*—
Preston, Donald; and Yeaton, Robert G., 4,357,859, Cl. 92-41.000.
Yokobe, Tetsuo; Masago, Mitsuru; Chihara, Yasuaki; and Maruyama, Yutaka, to Yoshitomi Pharmaceutical Industries Ltd. Benzothiazine derivatives. 4,358,407, Cl. 260-243.300.
Yokohama Kiko Co., Ltd.: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akiro; Katayama, Shitomi; and Nomura, Suguru, 4,358,507, Cl. 428-429.000.
Yokota, Hajime: *See*—
Nishijima, Hideo; Fukushima, Isao; and Yokota, Hajime, 4,358,797, Cl. 360-14.200.
Yokoya, Satoshi: *See*—
Numata, Norio; and Yokoya, Satoshi, 4,358,638, Cl. 179-1.0GS.
Yomoda, Kenju, to Lotte Company Limited. Diluting and pouring apparatus for a liquid food. 4,358,029, Cl. 222-133.000.
Yonezawa, Taketoshi: *See*—
Namba, Yoshiharu; and Yonezawa, Taketoshi, 4,358,295, Cl. 51-309.000.
Yoshida, Junichi: *See*—
Tohyama, Nobuo; Yoshida, Junichi; Yamano, Shozo; and Kamiya, Kenji, 4,358,836, Cl. 368-47.000.
Yoshida, Makoto; and Baba, Satoru, to Aupac Kabushiki Kaisha. Method for manufacturing commutator. 4,358,319, Cl. 75-200.000.
Yoshida, Makoto: *See*—
Kanda, Masao; and Yoshida, Makoto, 4,358,067, Cl. 242-75.510.
Yoshida, Motoharu: *See*—
Hori, Takanobu; and Yoshida, Motoharu, 4,357,913, Cl. 123-41.490.
Yoshida, Yoshinobu: *See*—
Fujita, Shinsaku; Itoh, Isamu; Ono, Shigetoshi; Harada, Tooru; and Yoshida, Yoshinobu, 4,358,526, Cl. 430-223.000.
Yoshii, Masataka; Anabuki, Mitsugu; Kuwabara, Tatsuro; Obana, Yasuo; and Kono, Takuo, to Nippon Steel Corporation. Process for refining molten pig iron and steel. 4,358,313, Cl. 75-60.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Ota, Akiho; Nishikawa, Masanori; Hattori, Masao; Tsuboi, Akio; Hama, Yoshihisa; Okudaira, Tadashi; and Sugihara, Shigeharu, 4,358,491, Cl. 428-35.000.
Yoshitomi Pharmaceutical Industries Ltd.: *See*—
Yokobe, Tetsuo; Masago, Mitsuru; Chihara, Yasuaki; and Maruyama, Yutaka, 4,358,407, Cl. 260-243.300.
Youkstetter, Frank O. Balancing game apparatus. 4,358,110, Cl. 273-1.0GC.
Young, Alastair J., to Automotive Products Limited. Brake pressure modulating valve. 4,358,163, Cl. 303-22.00R.
Young, Raymond R.; and Buck, Donald F., to Visual Marketing, Inc. Sound-actuated advertising light display. 4,358,754, Cl. 340-815.170.
Yu, Cheng-Der, to Syntex (U.S.A.) Inc. Acetal stabilized prostaglandin compositions. 4,358,603, Cl. 560-2.000.
Zabler, Erich: *See*—
Wolf, Konrad; and Zabler, Erich, 4,358,762, Cl. 340-870.350.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kao: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Hamada, Masa; Kondo, Shinichi; and Ishizuka, Masaaki, 4,358,602, Cl. 549-328.000.
Zapletal, Henry; and Wells, Thomas J., to Leggett & Platt, Incorporated. Spring assembly. 4,358,097, Cl. 267-101.000.
Zaschke, Horst; Demus, Dietrich; and Deresch, Sylvia, to VEB Werk fur Fernsehelektronik im VEB Kombinat Mikroelektronik. Nematic liquid crystals of 5-cyano-2-[4-acyloxyphenyl]-pyrimidines and mixtures containing the same. 4,358,393, Cl. 252-299.610.
Zaschke, Horst: *See*—
Schubert, Herrmann; Demus, Dietrich; Zaschke, Horst; Kuschel, Frank; Pelzl, Gerhard; Nothnikz, Hans-Ulrich; and Schliemann, Willibald, 4,358,589, Cl. 544-179.000.
Zelkowitz, Hyman L., to Knoll International, Inc. Apparatus and method for upholstering a rigid chair shell. 4,357,723, Cl. 5-403.000.
Zenith Radio Corporation: *See*—
Domoleczny, James D.; Loh, Raymond D. Y.; Manske, Hans E.; Marchese, Joseph N.; and Michelotti, Carl A., 4,358,792, Cl. 358-254.000.
Zilske, Wolfgang: *See*—
Simon, Franz; Huth, Werner; Dorbath, Bernd; and Zilske, Wolfgang, 4,358,351, Cl. 204-44.000.
Zimmer, David J.; Sexsmith, Frederick H.; and Howard, Dennis D., to Lord Corporation. Radiation-curable compositions containing water. 4,358,476, Cl. 427-44.000.
Zimmermann, Georg: *See*—
Gruner, Heiko; and Zimmermann, Georg, 4,358,748, Cl. 338-25.000.
Zlupko, John E.; and Damsky, Ben L., to General Electric Company. Current-limiting fuse with improved means for interrupting low overcurrents. 4,358,747, Cl. 337-273.000.
Zoecon Corporation: *See*—
Kohn, Gustave K., 4,358,591, Cl. 544-311.000.
Lee, Shy-Fuh; and Henrick, Clive A., 4,358,606, Cl. 560-163.000.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., to Texaco Inc. Lubricating oil composition. 4,358,385, Cl. 252-32.70E.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., to Texaco Inc. Marine crankcase lubricant. 4,358,386, Cl. 252-32.70E.
Zoleski, Benjamin H.; Sung, Rodney L.; Levine, Stephen A.; and Cullen, William P., to Texaco Inc. Cylinder lubricating oil composition. 4,358,387, Cl. 252-33.400.
Zory, Peter S., Jr.: *See*—
Childs, Richard B.; and Zory, Peter S., Jr., 4,358,676, Cl. 250-211.00J.
Zwergel, Wilhelm: *See*—
Sperner, Franz; Aldinger, Fritz; and Zwergel, Wilhelm, 4,358,663, Cl. 219-270.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF NOVEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ford Motor Company: *See*—
Labana, Santokh S.; and Theodore, Ares N., Re. 31,077, Cl. 525-327.300.

Herman, Rodney W. Cigarette package. Re. 31,076, Cl. 206-246.000.

Labana, Santokh S.; and Theodore, Ares N., to Ford Motor Company. Powder paint with epoxy and hydroxy copolymer and mixture of dicarboxylic acids and polyanhydrides. Re. 31,077, Cl. 525-327.300.

London, Wallace; and Meyer, Kurt L., to London, Wallace. Garment bag assembly. Re. 31,075, Cl. 190-41.00B.

Meyer, Kurt L.: *See*—
London, Wallace; and Meyer, Kurt L., Re. 31,075, Cl. 190-41.00B.

Nolte, Ernst P., to Prakla-Seismos G.m.b.H. Well surveying instrument and method. Re. 31,074, Cl. 73-151.000.

Prakla-Seismos G.m.b.H: *See*—
Nolte, Ernst P., Re. 31,074, Cl. 73-151.000.

Segerstrom, Richard J., to Video Logic Corporation. Video tape recorder system having means for suppressing video track crossover noise during slow and fast motion operation. Re. 31,078, Cl. 360-10.300.

Theodore, Ares N.: *See*—
Labana, Santokh S.; and Theodore, Ares N., Re. 31,077, Cl. 525-327.300.

Video Logic Corporation: *See*—
Segerstrom, Richard J., Re. 31,078, Cl. 360-10.300.

LIST OF DESIGN PATENTEES

Allard, Peter B.; Arendt, William F.; and Volk, Rodney H., to Thermo King Corporation. Cover for a transport refrigeration unit. 266,870, 11-9-82, Cl. D23-142.000.

Ancra Corporation: *See*—
Prete, Ernest, Jr., 266,828, Cl. D8-383.000.

Anderson, Mark L. Veterinary hypodermic syringe tip or similar article. 266,872, 11-9-82, Cl. D24-25.000.

Apco Graphics, Inc.: *See*—
Cole, H. Randall, 266,858, Cl. D19-90.000.

Arendt, William F.: *See*—
Allard, Peter B.; Arendt, William F.; and Volk, Rodney H., 266,870, Cl. D23-142.000.

Atlantic Richfield Company: *See*—
Withrow, Larry J., 266,827, Cl. D8-373.000.

Baker, Charles W.: *See*—
Skender, Berislav C. M., 266,859, Cl. D21-37.000.

Baldwin Piano & Organ Company: *See*—
Scott, Thomas S., 266,852, Cl. D17-6.000.

Barboot: *See*—
Skender, Berislav C. M., 266,859, Cl. D21-37.000.

Bendix Corporation, The: *See*—
Vintzel, Constantine, 266,841, Cl. D13-40.000.

Bessone, Carlo S.; and Roche, William J., to GTE Products Corporation. Lamp. 266,878, 11-9-82, Cl. D26-93.000.

Blissett, Malcolm G.: *See*—
Lucarelli, James H.; Bowen, Arthur W.; and Blissett, Malcolm G., 266,797, Cl. D2-320.000.

Bowen, Arthur W.: *See*—
Lucarelli, James H.; Bowen, Arthur W.; and Blissett, Malcolm G., 266,797, Cl. D2-320.000.

Brice, John N., to Dutch West India, Ltd. Wood burning stove. 266,867, 11-9-82, Cl. D23-97.000.

Brown, Bobby. Golf flag or similar article. 266,832, 11-9-82, Cl. D11-166.000.

Brunz, Linda S.: *See*—
Kula, Cheryl J.; and Brunz, Linda S., 266,800, Cl. D3-31.000.

Candiliotis, Gerassimos C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 266,835, 11-9-82, Cl. D12-147.000.

Canon Kabushiki Kaisha: *See*—
Hirata, Takashi; and Fushimoto, Hideo, 266,854, Cl. D18-7.000.
Yoshioka, Eiichi; and Okuyama, Tsutomu, 266,853, Cl. D18-7.000.
Yoshioka, Eiichi; and Murakami, Osamu, 266,855, Cl. D18-7.000.

Child, Francis W. Teat dilator. 266,871, 11-9-82, Cl. D24-23.000.

Christov Urich, Joy. Tea kettle or similar article. 266,821, 11-9-82, Cl. D7-320.000.

Clarkson, Aron J. Billiard table. 266,861, 11-9-82, Cl. D21-232.000.

Cole, H. Randall, to Apco Graphics, Inc. Message clip. 266,858, 11-9-82, Cl. D19-90.000.

Cortese, Joseph O.; and Donovan, Stephen. Bag. 266,801, 11-9-82, Cl. D3-41.000.

Dickinson, Richard J., to Sinclair Research Limited. Computer. 266,848, 11-9-82, Cl. D14-100.000.

Donovan, Stephen: *See*—
Cortese, Joseph O.; and Donovan, Stephen, 266,801, Cl. D3-41.000.

dos Santos, Jose C. Building block. 266,875, 11-9-82, Cl. D25-80.000.

Doyel, John S. Flour sifter. 266,819, 11-9-82, Cl. D7-47.000.

Durand, Jean-Jacques. Tumbler or similar article. 266,815, 11-9-82, Cl. D7-14.000.

Dutch West India, Ltd.: *See*—
Brice, John N., 266,867, Cl. D23-97.000.

East Hampton Industries, Inc.: *See*—
Ferrin, Kenneth, 266,820, Cl. D7-50.000.

Edwards, Douglas F.; and Mountain, Robert R., Jr., to J. B. Foote Foundry Co., The. Stove. 266,869, 11-9-82, Cl. D23-97.000.

Egleston, Harry B. Dispensing container or similar article. 266,830, 11-9-82, Cl. D9-416.000.

Famolare, Inc.: *See*—
Famolare, Joseph P., Jr., 266,798, Cl. D2-322.000.

Famolare, Joseph P., Jr., to Famolare, Inc. Shoe bottom. 266,798, 11-9-82, Cl. D2-322.000.

Fear, Jeffrey R. Stool. 266,803, 11-9-82, Cl. D6-30.000.

Ferrin, Kenneth, to East Hampton Industries, Inc. Spaghetti measuring device. 266,820, 11-9-82, Cl. D7-50.000.

Four Star Corporation: *See*—
Ingram, Charles E., 266,836, Cl. D12-157.000.

Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Dialing pad for a car telephone set. 266,845, 11-9-82, Cl. D14-66.000.

Fushimoto, Hideo: *See*—
Hirata, Takashi; and Fushimoto, Hideo, 266,854, Cl. D18-7.000.

Godbersen, Gary L., to Gomaco, Inc. Highway maintenance vehicle. 266,850, 11-9-82, Cl. D15-22.000.

Gomaco, Inc.: *See*—
Godbersen, Gary L., 266,850, Cl. D15-22.000.

Gooding, Elwyn R., to Reagents of the University of Michigan, The. Infant car seat liner. 266,802, 11-9-82, Cl. D6-5.000.

Goodman, David S.: *See*—
Treadway, Freeman A.; and Goodman, David S., 266,837, Cl. D12-181.000.

Goodyear Tire & Rubber Company, The: *See*—
Lucarelli, James H.; Bowen, Arthur W.; and Blissett, Malcolm G., 266,797, Cl. D2-320.000.

Greenlees, James C. Writing guide. 266,857, 11-9-82, Cl. D19-88.000.

Gronborg, Jan. Visor. 266,795, 11-9-82, Cl. D2-233.000.

GTE Products Corporation: *See*—
Bessone, Carlo S.; and Roche, William J., 266,878, Cl. D26-93.000.

Harada, Toshio: *See*—
Yamamura, Masamichi; Harada, Toshio; and Tanaka, Michio, 266,825, Cl. D7-351.000.

Harris, David P. Garlic press. 266,824, 11-9-82, Cl. D7-101.000.

Hasegawa, Toshifumi: *See*—
Wada, Ryuji; Munekata, Kenichi; Shima, Yoshio; Okoshi, Fumihiko; Kamiya, Yoji; Hasegawa, Toshifumi; and Kanii, Norikazu, 266,851, Cl. D15-122.000.

Haslbeck, Joseph, to Highland Mfg. Company Ltd. Goggles. 266,796, 11-9-82, Cl. D2-234.000.

Highland Mfg. Company Ltd.: *See*—
Haslbeck, Joseph, 266,796, Cl. D2-234.000.

Hills, Joseph F., to Jimmy's Radio & Television Corp. Radio. 266,846, 11-9-82, Cl. D14-70.000.

Himes, Gary F. Wind drag reduction airfoil. 266,838, 11-9-82, Cl. D12-181.000.

Hirata, Takashi; and Fushimoto, Hideo, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 266,854, 11-9-82, Cl. D18-7.000.

Hirooka, Junji: *See*—
Fukushima, Hisao; and Hirooka, Junji, 266,845, Cl. D14-66.000.

Iida, Kaoru, to Kabushiki Kaisha Suwa Seikosha. Wristwatch. 266,831, 11-9-82, Cl. D10-38.000.

Ingram, Charles E., to Four Star Corporation. Tie down bracket for a luggage rack. 266,836, 11-9-82, Cl. D12-157.000.

International Business Machines Corporation: *See*—
Meister, Herbert E., Jr.; Parks, Harville M.; and Taylor, James R., 266,849, Cl. D14-111.000.

J. B. Foote Foundry Co., The: *See*—
Edwards, Douglas F.; and Mountain, Robert R., Jr., 266,869, Cl. D23-97.000.

Jimmy's Radio & Television Corp.: *See*—
Hills, Joseph F., 266,846, Cl. D14-70.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Iida, Kaoru, 266,831, Cl. D10-38.000.

Kamiya, Yoji: *See*—
Wada, Ryuji; Munekata, Kenichi; Shima, Yoshio; Okoshi, Fumihiko; Kamiya, Yoji; Hasegawa, Toshifumi; and Kanii, Norikazu, 266,851, Cl. D15-122.000.

Kanii, Norikazu: *See*—
Wada, Ryuji; Munekata, Kenichi; Shima, Yoshio; Okoshi, Fumihiko; Kamiya, Yoji; Hasegawa, Toshifumi; and Kanii, Norikazu, 266,851, Cl. D15-122.000.

King-Seeley Thermos Co.: *See*—
Seager, Richard H., 266,822, Cl. D7-77.000.

Kula, Cheryl J.; and Brunz, Linda S. Baby carrier. 266,800, 11-9-82, Cl. D3-31.000.

Lane Company, Inc., The: *See*—
Welch, Kristin M., 266,812, Cl. D6-192.000.
Welch, Kristin M., 266,813, Cl. D6-192.000.

Lenger, Sidney A., Jr., to Singer Company, The. Bed headboard or similar article. 266,805, 11-9-82, Cl. D6-79.000.

Lenger, Sidney A., Jr., to Singer Company, The. Bed headboard or similar article. 266,806, 11-9-82, Cl. D6-80.000.

Lockheed Corporation: *See*—
McHaney, Jack, 266,826, Cl. D8-51.000.

Lucarelli, James H.; Bowen, Arthur W.; and Blissett, Malcolm G., to Goodyear Tire & Rubber Company, The. Shoe sole. 266,797, 11-9-82, Cl. D2-320.000.

Mace, Herbert F. Skein holder or the like. 266,799, 11-9-82, Cl. D3-23.000.

Martens, LeRoy. Steam-fry waterless cooker. 266,823, 11-9-82, Cl. D7-356.000.

Mason, Jimmie L., to Total Flood Corporation. Solenoid valve. 266,863, 11-9-82, Cl. D23-19.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Yamamura, Masamichi; Harada, Toshio; and Tanaka, Michio, 266,825, Cl. D7-351.000.

McGourty, Michael J., to PYE (Electronic Products) Limited. Radio cabinet or similar article. 266,847, 11-9-82, Cl. D14-71.000.

McHaney, Jack, to Lockheed Corporation. Aircraft landing gear servicing tool. 266,826, 11-9-82, Cl. D8-51.000.

McVey, Charles W. Remote speed control unit for a fireplace blower motor. 266,839, 11-9-82, Cl. D13-32.000.

Meister, Herbert E., Jr.; Parks, Harville M.; and Taylor, James R., to International Business Machines Corporation. Impact printer or the like. 266,849, 11-9-82, Cl. D14-111.000.

Mesin, Betty L.: *See*—
Skender, Berislav C. M., 266,859, Cl. D21-37.000.

Mountain, Robert R., Jr.: *See*—
Edwards, Douglas F.; and Mountain, Robert R., Jr., 266,869, Cl. D23-97.000.

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Wada, Ryuji; Munekata, Kenichi; Shima, Yoshio; Okoshi, Fumihiko; Kamiya, Yoji; Hasegawa, Toshifumi; and Kanii, Norikazu, 266,851, Cl. D15-122.000.

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Oka, Shigeo, to Pentel Kabushiki Kaisha d.b.a. Pentel Co., Ltd. Pen cap or similar article. 266,856, 11-9-82, Cl. D19-57.000.

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Welch, Kristin M., to Lane Company, Inc., The. Furniture arm frame or similar article. 266,813, 11-9-82, Cl. D6-192.000.
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Williams, David P. G., to Syracuse China Corporation. Dinner plate or similar article. 266,817, 11-9-82, Cl. D7-35.000.
Withrow, Larry J., to Atlantic Richfield Company. Mounting bracket. 266,827, 11-9-82, Cl. D8-373.000.
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Bountiful Ridge Nurseries, Inc.: *See*—
Coke, Stephen M.; and Smith, Leon I., 4,926, Cl. 34.000.
Coke, Stephen M.; and Smith, Leon I., to McCormick's Fruit Tree Co. Inc.; and Bountiful Ridge Nurseries, Inc., a part interest. Apple tree. 4,926, 11-9-82, Cl. 34.000.
Ecke, Paul, Jr., to Paul Ecke Ranch. Poinsettia named V-14 White. 4,938, 11-9-82, Cl. 86.000.
Fischer, Arnold W., to Pan-American Plant Company. African Violet named Bluebird. 4,934, 11-9-82, Cl. 69.000.
Fischer, Arnold W., to Pan-American Plant Company. African Violet named Fairy Queen. 4,935, 11-9-82, Cl. 69.000.
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van Staaveren, Maurits C., 4,937, Cl. 71.000.
McCormick's Fruit Tree Co. Inc.: *See*—
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McRae, Edward A., to Melridge, Inc. Lily plant: Lilium 'Venture'. 4,932, 11-9-82, Cl. 68.000.
McRae, Edward A., to Melridge, Inc. Lily plant: Lilium 'Utopia'. 4,933, 11-9-82, Cl. 68.000.
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McRae, Edward A., 4,932, Cl. 68.000.
McRae, Edward A., 4,933, Cl. 68.000.
Mitchell, Luther L. Azalea plant named Southern Belle. 4,929, 11-9-82, Cl. 56.000.
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Fischer, Arnold W., 4,934, Cl. 69.000.
Fischer, Arnold W., 4,935, Cl. 69.000.
Paul Ecke Ranch: *See*—
Ecke, Paul, Jr., 4,938, Cl. 86.000.
Smith, Leon I.: *See*—
Coke, Stephen M.; and Smith, Leon I., 4,926, Cl. 34.000.
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Weinberger, John H., 4,927, Cl. 41.000.
Swenson, Elmer. Grapevine. 4,928, 11-9-82, Cl. 47.000.
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van Staaveren, M. C.: *See*—
van Andel, Jacob, 4,930, Cl. 68.000.
van Staaveren, Maurits C., 4,936, Cl. 70.000.
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Williams, Ernest D. Miniature rose plant. 4,925, 11-9-82, Cl. 9.000.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 9, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 208

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736 4,358,382
771 4,358,383

CLASS 211

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42 4,358,019

CLASS 212

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195 4,358,021

CLASS 215

224 4,358,022

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10.55 B 4,358,653
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121 ED 4,358,656
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CLASS 237

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447 4,358,058
691 4,358,059

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44 4,358,845

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CLASS 375

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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01 :	4,358,358		4,358,184		4,358,833		4,357,760		4,358,593		4,358,346
04 :	4,357,779		4,358,192		4,358,843		4,357,776		4,358,604		4,358,401
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